TEACHER COLLABORATION AROUND COMPUTER USE WITH
ENGLISH AS A SECOND LANGUAGE STUDENTS

By

WENDY-JENE MINNES

B.A., Principia College, 1981
B.Ed., Queen's University, 1982

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Department of _Curriculum and Instruction_

The University of British Columbia
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ABSTRACT

This study analyzes what happened when an innovation that assumed some form of teacher collaboration around computer use with English as a Second Language (ESL) students was implemented. It describes the nature and extent of teacher collaboration found to occur and seeks to account for the patterns that emerged by examining some prevalent structural and cultural features of school life. The particular notion of collaboration considered involves explicit, ongoing discussion and mutual planning.

Conditions established for the innovation's implementation revealed the expectation that teachers would coordinate their work around computer use to integrate the language and content learning of ESL students. Observation and teacher interviews indicated that resource and ESL classroom teachers tended to engage in "expert-novice" or "peer" relationships, depending on the extent of their computer knowledge. Generally common to both forms of collaboration around computer use were the following patterns: one-on-one encounters; brief, informal exchanges; short-term planning; implicit roles and expectations; and a focus on computer-related concerns. An analysis of these patterns suggests that the school's organization of physical space, time, and authority, as well as teacher norms of individualism and

noninteraction, their classroom-centered focus and adherence to a practicality ethic, may have served to shape the emergent forms of teacher collaboration.

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ACKNOWLEDGEMENTS

To my grandfather, Burdette Farrand

CHAPTER ONE

INTRODUCTION

The notion of teacher collaboration often conjures up favorable images of two or more teachers actively engaged in joint ventures related, either directly or indirectly, to school improvement efforts. Over the past decade, the role of teacher collaboration in supporting meaningful school change has emerged repeatedly in the literature (Little, 1987, 1982; Lieberman, 1988, 1986; Zahorik, 1987; Fullan, 1982). Notably, however, even though this concept is promoted as a way to generate vibrant and effective school programs, research that documents and accounts for what the "attractive ideals of collaboration" (Hord, 1986, p. 25) look like in practice is scarce.

When teachers work together to implement an innovation, various forms of collaboration are possible. Their collaborative efforts may involve, for instance, informal and brief exchanges pertaining to the innovation's use or the sharing of materials without any need for further conversation. Alternately, collaboration may involve more extensive discussion to clarify specific problems as they arise. The particular form of collaboration that occurs in any given context will depend on the innovation itself, the teachers themselves, as well as the conditions within which teachers work.

Currently the research literature offers a particular view of collaboration that involves teachers discussing on an ongoing basis, what they are doing and why (Little, 1987, 1982; Lieberman, 1988; Fullan, 1982). However, this form of teacher collaboration is difficult to sustain in schools because of the culture in which they work (Hargreaves, 1989; Bullough, 1987). Certainly this culture is not identical across school sites (Feiman-Nemser & Floden, 1986; Little, 1982), yet some general norms are said to prevail (Goodlad, 1984; Sarason, 1982; Lortie, 1975). Predominant among these is teacher isolation, a feature of school life that may present a barrier to sustained collaboration among teachers such that more formal collaborative relations are "not the rule, but the rare, often fragile exception" (Little, 1987, p. 493).

In the field of teaching English as a Second Language (ESL), language and content teachers are more commonly opting to combine their expertise to simultaneously promote academic language and content learning among ESL students (Mohan, 1989, Snow, Met, and Genesee, 1989; Brinton, Snow, and Wesche, 1989, Benesch, 1988). Furthermore, the possibilities of two or more teachers working together to enhance ESL teaching and learning may increase with the introduction of computers as an innovative teaching tool (Higgins and Johns, 1984; Wyatt, 1984). In light of what is known about collaborative teacher relations, questions are

inevitably raised about the forms that such collaboration may take given the larger context in which teachers work.

The particular notion of collaboration considered in this thesis is a predominant one in current literature. This form of collaboration entails explicit discussion around problems related to an innovation, and working out solutions to these. Other forms of collaboration, as rich as they undoubtedly are with respect to the teacher interactions they promote, are not considered here.

Purpose of the Study

This study analyzes the first year of implementation of a curriculum innovation designed to break down teacher isolation by advocating a means for planning second language learning. The provision of several supportive conditions revealed an assumption that teachers would work together in some collaborative form around computer use with secondary level ESL students. This study describes the nature and extent of collaboration found to occur among the teachers involved and accounts for the patterns that emerged by examining some structural and cultural conditions of school life.

The major question asked is: What happens to an innovation that assumes some form of teacher collaboration when implemented in a context of teacher isolation? More specific questions include: What forms does teacher

collaboration take around computer use with ESL students?; and what structural and cultural conditions within schools can be said to account for these?

The significance of this study lies in its effort to look at teacher collaboration in terms of school norms. While it is recognized that numerous other factors may serve to influence the forms that teacher collaboration may take (for example, gender, personality, and administrative factors) this study seeks to account for what was found to occur through an examination of the school culture. By looking at what happened in a particular situation where it was assumed ESL classroom and resource teachers would find ways to coordinate their work around computer use to integrate the language and content learning of ESL students, insight is gained regarding the influence of prevailing school conditions on teacher collaboration.

The thesis consists of five chapters. Chapter two presents a critical review of the literature that is related to the specific research questions. Chapter three describes the methods used to collect and analyze the data. Chapter four discusses the research findings, and chapter five states conclusions, implications and directions for further research.

Background to the Study

In September 1989, a curriculum innovation promoting the use of computers with ESL students was implemented at an inner city high school. The proposal was supported by university-based and district ESL consultants. Funding for the lab and release time for three resource teachers was provided by the Ministry of Education and the ESL Fund for Excellence Project. Three resource teachers and four ESL consultants comprised the project "team".

The critical features of the innovation are as follows: first, it advocates Mohan's knowledge framework (Mohan, 1986) as the preferred means for ESL teachers to organize the integration of academic language and content teaching for ESL students; second, it involves the use of computers to support this approach to second language teaching; and third, it assumes, but does not specify, some form of teacher collaboration around planning computer use for ESL students.

The knowledge framework is comprised of six organizational categories, or knowledge structures, said to reflect "six major types of knowledge" (Early, 1990a, p. 83). The categories termed "description", "sequence", and "choice" are equated with practical knowledge, while those of "classification", "principles" and "evaluation" are linked with theoretical, or background knowledge (ibid). Each knowledge structure can be identified in, and expressed

through, written text and graphics. When using the knowledge framework to design tasks and teaching units for ESL students, teachers examine a content topic for specific knowledge structures. Once identified, the content material and selected knowledge structures are conveyed through appropriate graphics. These "key visuals" guide students' language development and enhance their understanding of subject matter since they serve to lessen the linguistic demand placed on students.

Computers were seen to present a novel way to extend the knowledge framework since they have the capacity to represent its six categories in text and graphic form and work with those categories dynamically. Conditions established for the innovation's implementation revealed the expectation that teachers would jointly plan and create course materials employing key visuals to link language and content for ESL students. The provision of scheduled release time for three resource teachers ensured that someone familiar with computers was available to assist any ESL teacher who chose to bring their students to the lab. As well, two of the three resource teachers were experienced in adapting content materials using the knowledge framework and both were able to apply their understanding of this to computer use. While the innovation assumed teachers would collaborate in some way around planning ESL students' computer use, the forms that it would take were left open to the teachers themselves.

The high school where this study was conducted has a student population of fourteen hundred and staff of ninety. Considerable ethnic diversity exists among the student body with students originating from sixty two countries, world wide. Over seventy percent of the students speak English as a second, or additional language. The majority of these students are in regular academic programs. Approximately two hundred students are involved in the ESL program. Since many of these students are refugee claimants, the number of ESL students fluctuated throughout the year. Ten teachers are involved with the ESL program on either a full or part time basis. The length of time these teachers have been at the school varied from one to twenty years. An ESL department, formed six years earlier, provides a forum for teachers to meet monthly, if not more often, to discuss issues raised either by the department head or the teachers themselves. Most ESL teachers have their own classrooms although several others, specified as "floaters", move from room to room because of a shortage of space. Although one ESL classroom is adjacent to the computer lab, the rest are scattered throughout the building.

Limitations

Two limitations for this study are as follows:

1. This study is based on selected observations over a four week period and teacher self reports of their activities at the end of the first year of the innovation's implementation. Thus, no claims are made about the actual forms of collaboration that occurred during the initial stages of implementation. Although teachers were asked to reflect on the forms of collaboration that occurred earlier in the year, the study provides a picture of collaboration at only one point in time in the life of the project.

2. The study does not examine all possible types of collaboration that occurred. It is limited to examining the forms of a particular type of collaboration; one that focuses on ongoing discussion and mutual planning around problems of implementation. Subsequently, no claims are made about any of the various other kinds of rich interactions that teachers engaged in during the course of the year.

Key Terms

Collaboration: Joint action involving two or more individuals working together to commonly define problems and work out solutions to these. This may range from brief, informal exchanges to more lengthy detailed discussion regarding the innovation itself and planning for its use. In this study, collaboration more specifically refers to those interactions that involve ongoing discussion and joint planning around innovation-related problems. This form of sustained collaboration requires the establishment of specific supportive conditions.

ESL classroom teacher: A teacher who works with ESL students engaged in learning academic content in a particular subject area (for example, English, Science, Social Studies, Math).

ESL students: Students who are registered in a school program designed to teach English as a second or an additional language.

Implementation: Refers to what teachers actually do with an innovation, how it is used, interpreted, and translated into classroom practice.

Innovation: Anything that is new relative to the user (for example, teaching materials, strategies, activities, program plans or curriculum policy).

Resource teacher: A teacher who has been allotted specific time in the computer lab to allow them to assist those ESL classroom teachers who want to use computers as an aid to integrating their students' language and content learning.

Teacher Isolation: Refers to the lack of sustained contact among teachers for the purpose of addressing curricular and instructional matters.

CHAPTER TWO

REVIEW OF LITERATURE

The significance of the teachers' role in educational change has been widely acknowledged (Crandall, 1983; Cuban, 1982; Fullan, 1982). As Doyle and Ponder (1977) astutely claim, teachers are the "ultimate arbiters of classroom practice" (p. 75) since they decide not only what innovations to accept, but also how an innovation will be used within a classroom setting. Certainly an innovation may advocate specific changes; for example, in program goals, activities, evaluation, resources and/or assumptions about teaching and learning (Werner, 1988, p. 2). However, the form an educational change takes ultimately depends upon the interpretation that individual teachers give to a particular innovation.

Numerous factors are said to influence the decisions that teachers' make regarding the actual use of an innovation. For instance, three important criteria that teachers may use when assessing any educational change include: first, need (ie., Does the innovation address a perceived need?); second, clarity (ie., Are the underlying concepts and the process of implementation clearly established?); and third, complexity (ie., Do the perceived costs outweigh the benefits?) (Werner & Case, 1988). Additionally, Fullan (1982) specifies characteristics at the

school and district levels (for example, teacher-teacher relations, administrative support, staff development and participation) as well as those external to the school system itself (for example, the extent of support from government agencies) that are believed to further influence the implementation process (pp. 63-75).

The studies that form the basis for these assertions, undoubtedly some provide insight for those who choose to adopt a managerial perspective towards school change. Viewing the process from this perspective, the successful implementation of an innovation may entail the manipulation of identifiable and clearly defined variables, with the intent of persuading a classroom teacher to adopt a new program over time. However, such a perspective may unrealistically assume the teacher is a "passive consumer at the end of the chain willing to adopt a new product" (House, 1981, p. 22); that is, an individual to be worked *on* rather than *with*.

A major drawback of the managerial perspective on educational change seems to lie in its failure to acknowledge the "larger cultural dynamics" at work within school settings; those patterns of belief and behavior assumed 'normal' by the many individuals immersed in school life (Rossman, Corbett, and Firestone, 1988, p. 18). Yet, an examination of these dynamics appears to offer an alternative explanation for the adaptations teachers may make when presented with an innovation based on one or more

assumptions that run contrary to the structural and cultural conditions prevalent in the context where they work. Several prominent researchers whose writings have shed valuable insight on the process of educational change, (for example, Goodlad, 1984, Lortie, 1975, and Sarason 1971, 1982) emphasize the insight to be gained by understanding the "matrix of existing relationships, practices and ideas" of which teachers are a part (Sarason, 1971, p. 171). Their studies identify structural and cultural features of schools that serve to maintain stability rather than induce change, regardless of the nature or number of innovations proposed. One prevalent feature, noted by each of these researchers, is that of teacher isolation.

To date, few researchers (Flinders, 1988, Goodlad, 1984, and Tye & Tye, 1984) have stressed the impact of teacher isolation on efforts at change within schools, yet its influence is reportedly pervasive. Restricted by physical and temporal features of school life, and additionally by a tendency to embrace norms of individualism and autonomy (Lortie, 1975) teachers are frequently left to make sense of new programs on their own. What happens then when an innovation assuming teacher collaboration is implemented in a context where teacher isolation is a commonly shared expectation of those within the workplace?

In this chapter, based on a review of current literature, it is argued that the predominance of structural and cultural features reinforcing teacher isolation leads to

the following situation: an innovation assuming teacher collaboration will be shaped by those involved in its implementation to accommodate existing school conditions. In this study a cultural perspective on educational change is adopted. Thus, an explanation of what is meant by the "cultures of teaching" is set forth initially. Further discussion provides an overview of the literature that describes the conditions within schools that promote a central cultural feature, that of teacher isolation. The impact of these constraints on innovations assuming teacher collaboration is then emphasized. Suggestions as to possible conditions under which such innovations may work are additionally presented. The chapter concludes with specific questions raised by the literature that this study addresses.

Cultures of Teaching

The explanation of culture that Van Maanan (1988) sets forth in his book entitled, <u>Tales of the Field: On Writing Ethnography,</u> is adopted for the purposes of this study. He claims that "culture refers to the knowledge members...of a given group are thought to more or less share; knowledge of the sort that is said to inform, embed, shape, and account for the routine and not-so-routine activities of the members of the culture" (p. 3). Van Maanen admits culture "is necessarily a loose, slippery concept, since it is anything

but unchanging", yet nonetheless states that it is expressed "by the words and actions of its members" (ibid). Although not specified by Van Maanen, culture, as employed in this study, also refers to the complex interplay of beliefs, values, assumptions, and expectations held in common by group members and expressed through their words and actions.

In an informative summary of research broadly subsumed under the heading, "The Cultures of Teaching", Feiman-Nemser & Floden (1986) state that teaching cultures are embodied in the work-related beliefs and knowledge teachers share-- beliefs about appropriate ways of acting on the job and rewarding aspects of teaching, and knowledge that enables teachers to do their work" (p. 508). Said to be integral to such teaching cultures are "shared sentiments, habits of mind, and patterns of interaction" (p. 515). In their notion of teaching cultures, Feiman-Nemser and Floden support the more general concept of culture advocated here. Teachers, as members of an identifiable group, are seen to share certain "beliefs, knowledge, attitudes, and values" (p. 520) which lead to common actions and forms of interaction that are closely adhered to by the group.

Feiman-Nemser and Floden are reluctant, however, to speak about a single teaching culture as they prefer instead to acknowledge the presence of teaching "cultures". According to these authors, "the question of whether even a majority of teachers shares a common culture has not been answered" (p. 506). Recognizing that teachers "differ in

age, experience, social and cultural background, gender, marital status, subject matter, wisdom, and ability", and that furthermore, the schools where they teach and the students they teach differ as well (p. 507), arguably results in variations in the knowledge, beliefs, values, assumptions, and expectations that teachers hold about teaching and learning.

In further support of the notion of teaching cultures, Hargreaves (1989) and Bullough (1987) both discuss "patterns of thinking, belief and assumption" that communities of educators tend to share (Hargreaves, p. 26). Hargreaves asserts there are "dominant features" that are "reasonably well known, even if their range, consistency and origins remain matters of dispute" (p. 27). While Bullough (1987) also recognizes that teaching cultures are "clearly not all of a piece", he nevertheless acknowledges that "there are certain common threads" (p. 84). Both writers focus on these commonalties and shared understandings among teachers.

In this study, the cultures of teaching, like the notion of culture in general, are not viewed as monolithic (Van Maanen, 1988, p. 3) nor, as Hargreaves (1980) states, are they "free from inconsistency and contradiction" (p. 127). Nevertheless, the prevalence of certain "dominant features" (Hargreaves, 1989) and "common threads" (Bullough, 1987) within teaching cultures, make it possible to pursue one central feature, that of teacher isolation. In acknowledging the predominance of teacher isolation within

these cultures, certain norms reflecting what teachers consider to be their "appropriate" role (Bullough, p. 83), can be identified and seen to enhance "individualistic" tendencies (Hargreaves, p. 27; Bullough, p. 83).

Teacher Isolation

Somewhat of a paradox exists in using the term "isolation" to describe a central feature of most teachers' work environment. Teachers are rarely alone since their work demands continual contact with students during class time and frequently before and after as well. Cuban (1982), for example, states that in a typical high school, teachers and students "spend 70% to 80% of the school day...with one another" (p. 114). Additionally, Lieberman and Miller (1984) assert that "if teaching is to be understood as a 'lonely profession', then the source of that loneliness lies outside of the realm of children" (p. 11). Certainly, there are many educators who identify with Lieberman and Miller's description of teaching as "a personalized and isolated activity" (p. 42) or, in turn, relate to Sarason's (1982) notion of teaching as "a lonely profession" (p. 133). Such a view of teaching stems from the minimal contact that teachers have with other adults, especially their peers, and the subsequent lack of opportunities to discuss curricular and instructional matters.

While certain structural features restrict the extent
of interaction among teachers (including the significant
portion of time spent with students), there are, as well,
cultural features (including, for example, common beliefs,
values, and assumptions about teaching) that further
reinforce their isolation. An examination of some
conditions within schools that lead to such isolation
follows.

Structural Conditions: The Organization of Physical Space

The physical isolation of teachers from their peers has
been well-documented (see for example, Goodlad, 1984,
Lieberman & Miller, 1984, Lortie, 1975, and Sarason, 1971,
1982). As noted by Goodlad, the prevalence of self-
contained "classroom cells" encourages teacher separation,
rather than interdependence as a behavioral norm (p. 186).
Lortie (1975) presents an insightful historical account of
the development of these "multiple distinct classrooms"
(p. 14), citing high turnover staffing patterns and the
rapid expansion of public schools in the nineteenth century,
as reasons for the subsequent emergence of the "egg crate"
architecture of schools (p. 15). However, despite some
significant changes in staffing patterns and a stabilization
of the growth rate, a "separation and low task
interdependence among teachers" persists nevertheless
(ibid). This physical pattern of cellular organization

appears to have entrenched a social pattern whereby teachers
work for extended periods of time largely confined to their
classroom, with little or no collegial interaction. In an
excerpt from the book entitled, <u>Teachers, Their World and
Their Work,</u> the essence of this social pattern is portrayed:

> Once sign-in procedures are completed, greetings
> exchanged with colleagues, the last sip of coffee
> downed in the teachers' room, and the warning
> bell sounded, the classroom becomes a teacher's
> total world. It is a world that is unique and
> separate from the world of other adults. For six
> hours a day, five days a week, teachers live in
> an exclusive and totally controlled environment.
> For the majority of the day they are bound in
> space and time (Lieberman and Miller, 1984, p. 5).

Structural Conditions: The Organization of Time

As the above sketch of a teacher's "world and work"
suggests, teacher isolation is not only encouraged by the
self-contained classrooms typical of many schools, but is
also reinforced by the school schedule. Teachers work in an
environment where the major portion of any given day is
spent in the classroom with students. A high school day,
for instance, is described by Cuban (1982) as,

> ....sliced into periods of less than an hour,
> with teachers facing between 125-170 students
> a day in batches of 25 to 35, with a teaching
> load of five classes and two or more different
> lesson preparations with a dozen other external
> requirements of grading, credits, and exams"
> (p. 117).

Inevitably, under such conditions, opportunities for
contact between teachers are severely limited to brief

encounters between classes, before or after school, and/or during lunch periods. This assumes, however, that any "free" time has not already been allotted for "duty" assignments, school sports, class preparation, marking of student work, and/or formal meetings with either students or staff. As Sarason (1982) observed, time constraints pose considerable obstacles to teacher interaction since teachers spend almost their entire day with students (p. 132). Consequently "face-to-face contacts" are rare and generally do not exceed a few minutes (ibid). Lortie (1975) also found teachers' contacts with one another were "peripheral to their major obligations" (p. 232), that of ensuring instructional quality is maintained in their classrooms (Flinders, 1988, p. 25).

Structural Conditions: The Organization of Authority

The structure of authority in schools is hierarchical, with the principal at the top of the "ladder" and teachers at the bottom. Additionally, there may be an assistant or vice principal accountable to the principal and, in turn, department heads (at the secondary level) or lead teachers (at the elementary level) who assist in coordinating the activities of a specific group of teachers (Lieberman and Miller, 1984, p. 38). Even so, authority within schools tends to be "loosely coupled". While the lines of command are in place, they are frequently not specified unless

contested. Within the classroom sphere, teachers are given "almost complete authority" (Lieberman & Miller, p. 14) and seem to prefer "little interference in their daily classroom routines, particularly for decisions about curriculum and instruction" (Feiman-Nemser & Floden, 1986, p. 509). Any supervision and evaluation of their work by the principal or vice-principal is often a formality that occurs only rarely. However, in contrast to the extent of control that teachers exercise within their own classroom, once outside, teachers are said to "have little authority in making decisions that affect their environment" (Lieberman & Miller, p. 14). Rather, in the larger school context it is the principal who ultimately retains control and "sets a tone" that can "make working in a school pleasant or unbearable" (ibid, p. 12). Recognizing that teachers' authority is, for the most part, confined to the classroom, serves to reinforce teacher isolation, since it is largely within the privacy of their own room that teachers can and do, determine not only what they teach, but how they choose to teach it (ibid, p. 14).

Cultural Conditions:
Norms of Individualism and Noninteraction

Structural constraints in and of themselves pose obstacles to enhanced teacher interaction, making it difficult "for teachers to know how well they are doing or to see what others are doing" (Feiman-Nemser & Floden, 1986,

p. 516). As Hargreaves (1989) observes, "the fact that schools are segmented into isolated and insulated compartments... (divides) teachers from one another and (makes) comparison and collaboration between them difficult" (p. 27). In turn, teacher isolation cultivates "a preoccupation with classroom affairs, with those matters over which teachers have direct and immediate control and which consume the major part of their time and energy" (ibid). Sarason (1982) also comments that the lack of "sustained personal contact" with other adults during the course of a school day, means not only are teachers "psychologically alone...but they adapt to being alone" (p. 133).

Such observations indicate that interacting and overlapping with structural conditions of school life are cultural conditions that reflect a preference for isolation among teachers, or to view it in a more positive light, a preference for "autonomy" (Hargreaves, 1980). The adherence of teachers to norms of individualism and noninteraction; their focus on the immediacy of the classroom; and, additionally, their adoption of a "practicality ethic" that frequently resists rather than inspires change, are examples of cultural conditions promoting teacher isolation.

Norms of individualism and noninteraction among teachers can be seen as prevalent when one realizes that many "teachers have peers but no colleagues" (Feiman-Nemser & Floden, 1986, p. 508). Lieberman and Miller (1984), for

instance, believe that there is, overall, a lack of sharing among teachers "about teaching, about classes, about students, about perceptions" (p. 8). Instead, these researchers note, "relations with peers may be characterized as remote, oblique, and defensively protective" (p. 11). While discussion of the news, weather, and sports are viewed as acceptable topics for conversation, any discussion that relates to "instruction and what happens in classrooms" is generally not accepted or encouraged (ibid). Feiman-Nemser and Floden also affirm that although teachers "may very well be and likely are on 'friendly terms'", their conversations tend to avoid substantive issues related to "curriculum, instructional content, or teaching methods" (p. 509). As they explain,

> In most schools, the classroom is considered inviolate. Teachers are not supposed to invade one another's classroom or advise on methods or content unless directly asked. The physical isolation (of classrooms) conveys the message that teachers ought to cope with their problems on their own, reinforcing the norm of individualism. Working it out alone comes to be accepted as the way it should be in teaching (p. 517).

When Lortie (1975) interviewed elementary and secondary teachers to determine their views of "appropriate colleagueship" (p. 193), he learned that a "good colleague" was considered to be friendly, open and willing to share (p. 194). However, sharing in the sense used by these teachers, was seen to merely involve the exchange of resource materials and useful "tricks of the trade"

(p. 195). According to these findings, notably lacking is any mention of collegial interaction for the purposes of discussing new programs or the implications that these hold for classroom practice.

Left largely to work in isolation from one another, teachers learn to deal with classroom dilemmas on their own. The "'sink or swim' socialization" of teachers (Lortie, p. 210) means teachers frequently draw on their own expertise to make classroom decisions. Goodlad's (1984) findings further show that interaction, in the way of "ongoing exchanges of ideas and practices across schools, between groups of teachers, or between individuals in the same schools" (p. 187) assumes considerably less importance for teachers than their primary concerns which lie with the core tasks of teaching. As a result, Goodlad concludes, "teachers...to a large extent carry on side by side similar but essentially separated activities" (p. 188).

The tendency of teachers to embrace an "ideology of individualism" may, as Lortie (1975) claims, promote an image of "self-assured crustiness or even arrogance" (p. 210). However, Lortie further comments that "teacher individualism is more guarded and cautious--it lies behind a formal rhetoric given to praising cooperation and denying conflict" (ibid). The individualism that teachers express, he explains, "is not cocky and self-assured; it is hesitant and uneasy" (ibid). This hesitancy, Lortie suggests, may stem from "endemic uncertainties" inherent in teaching as an

occupation (p. 134); uncertainty that can arise, for example, in setting goals, monitoring student outcomes and judging the scope of one's effectiveness (pp. 143-148). Although some teachers do occasionally turn to their peers for assistance, confident that requests for help will be met (Lortie, p. 195), more often than not, teachers grapple with their uncertainties alone.

Alternately, Hargreaves (1980) states that "most teachers simply prefer to work alone" with their students (p. 141). While he believes "this reflects the professional's concern for autonomy", he nevertheless cautions, "this is not an adequate account since teachers do not wish merely to be autonomous in freedom from control by 'outsiders': they seek in the classroom, autonomy from one another" (pp. 141-142). Hargreaves, like others before him, asserts that "as far as colleagues are concerned,...at least in relation to teaching, the occupational culture displays a powerful cult of individualism" (p. 142). He reminds us, however, that norms of individualism and noninteraction can, and do, "exist side by side with friendly and cooperative social relations in staffroom aspects of the teacher's life" (p. 144).

As Feiman-Nemser and Floden (1986) comment, "in a system where shared problem solving rarely occurs and teachers are expected to work things out on their own" (p. 506), it seems understandable that norms of individualism and noninteraction prevail. Working in a

culture that tends to accept only "limited, specified, and circumscribed cooperation" (Lortie, 1975, p. 211), teachers must independently assess and ultimately come to terms with those practices and ideas which best suit their personal style and teaching situation. In such a work environment, a tendency to focus on the "immediacy" of the classroom becomes another identifiable norm.

Cultural Conditions: The Immediacy of the Classroom

A necessary extension of any discussion that focuses on teachers' "unwillingness" (Hargreaves and Woods, 1984, p. 3) or avoidance of collaboration with colleagues (Hargreaves, 1989, p. 27), is to mention the classroom-centered focus of teachers. According to Hargreaves (1989), this "classroom-centeredness...arises from and is in turn fed by the daily, recurring experience of classroom isolation" (p. 27). Furthermore, he states,

> ...add to this...the necessities of coping daily with classroom constraints of low resources, poor buildings and large class sizes, along with the strains that arise from the conflict-based character of the teacher-pupil relationship, and one can understand why teachers become not just concerned with but confined to classroom life and its problems. In such circumstances, it is hardly surprising that most teachers show little interest in becoming involved in extra-classroom activities..." (ibid).

Required to spend the bulk of one's day in a restricted environment, as Lieberman and Miller (1984) also comment, it

becomes understandable that "the most important and immediate interactions that teachers have are with their students" (p. 9).

Feiman-Nemser and Floden (1986) note, however, that "such isolation prevents teachers from enjoying the rewards of collegial interaction--support and praise for work well done, stimulation of new ideas" (p. 511). Furthermore in working apart from one another, teachers "have little opportunity to articulate and compare what they know" (p. 512), nor do they have "time to unravel the complex causes of the reality teachers face" (p. 516). Subsequently, teachers' preoccupation with the "immediacy" of the classroom is linked in turn to teachers' adherence to a "practicality ethic", said to guide their acceptance or rejection of curriculum innovations. An explanation of the link between these, as well as the role played by the "practicality ethic" in helping to reinforce teacher isolation, follows.

Cultural Conditions: An Ethic of Practicality

Doyle and Ponder's (1977) insightful discussion of the "ethic of practicality" that exists among teachers, highlights the notion that teachers tend to be most receptive to proposals for change that are "communicated clearly" (p. 77) and congruent with "conventional classroom procedures" (p. 79). Lieberman and Miller (1984), also

found that teachers search for "practical ideas (that) are immediate and concrete and can be effected with the resources and structures that currently exist" (p. 8). This behavior seems to reveal not only teachers recognition of "the added complications that flow from attempts to alter established practice", but additionally, "the degree to which current practices are highly adaptive to classroom realities" (Feiman-Nemser & Floden, 1986, p. 516).

Hargreaves and Woods (1984) further mention the tendency of teachers to avoid "long-term planning", concentrating their efforts instead "on short-term projects which might make a difference" (p. 3). In the classroom, Feiman-Nemser and Floden (1986) explain, "the sheer number and pace of events call for quick and decisive actions" (p. 516). Since teachers are required "to make innumerable instantaneous decisions", time for "reflection or critical thought" is scarce (Hargreaves & Woods, ibid). Not surprisingly, the pressing and complex demands of the classroom, lead teachers to seek "simple explanations and practical solutions" (Feiman-Nemser & Floden, ibid). Accordingly, as Bullough (1987) notes, teachers rarely talk among themselves "about the aims of education; what they want to know is how to do something better. They show very little patience with anything that is not 'practical' and make quite a show of how silly 'theory' is" (p. 88).

This focus on the classroom, emphasis on practicality and adherence to established procedures by teachers,

inevitably serves to perpetuate the culture as it is, rather than create possibilities for fundamental change. Teacher isolation, as one central feature of this culture, can thus be seen to arise not only from structural constraints (such as those described earlier) but in turn, by certain beliefs, values, and assumptions that teachers themselves hold about teaching and learning. In the next section, consideration is given to the impact that school conditions reinforcing teacher isolation can have on innovations that assume, but do not plan for, teacher collaboration. Additionally, supportive conditions are outlined that may serve to enhance collaborative efforts among teachers, rather than detract from these.

Teacher Collaboration in a Context of Teacher Isolation

Teacher collaboration may be said to involve two or more teachers working together on projects of mutual concern, over a period of time. While the specifics of what such collaboration may entail predictably differ from one context to the next, collaborative teacher efforts generally aim to bring about "improvement in education" (Wideen, 1989, p. 6). Currently there is ample talk about educational collaboration (of which teacher-teacher collaboration is only one of many possible alliances) yet, still lacking are descriptions of what the actual practice

entails and how conditions within schools either enhance or detract from this process.

In striking contrast, what has been repeatedly documented is the prevalence of teacher isolation in large numbers of schools. Both structural and cultural conditions have been shown to reinforce a situation where teachers for the most part, "work out of sight and hearing from one another, plan and prepare their lessons and materials alone, and struggle on their own to solve most of their instructional, curricular, and management problems" (Little, 1987, p.491). Thus, when an innovation that assumes teachers will "work together" (Lieberman, 1986) enters a context where collaboration is not the norm, two possible options exist. One of these is that the innovation will be rejected by those for whom it was meant or, alternately, it may be adapted to fit the context in which it is introduced.

Whether one or the other of these options predominates, would seem to depend on the extent to which conscientious efforts are made firstly, to acknowledge, and secondly, to alter those structural and cultural constraints known to inhibit interactions among teachers. Without such effort, any innovation that assumes collaboration may understandably be disregarded by those teachers for whom the innovation was meant. On the other hand, and perhaps more realistically (considering that there is the assumption that teachers will work together), if certain conditions are altered such that the norm of teacher isolation is, at least, challenged, it

is more likely that the innovation will be adapted by those teachers directly responsible for its implementation, to fit the larger context.

A discussion follows of several conditions within schools that have the potential to support rather than impede implementation of innovations assuming teacher collaboration. Whether such potential is actually realized, however, depends on the extent to which such conditions challenge those more firmly entrenched conditions known to perpetuate teacher isolation.

Teacher Collaboration: Supportive Conditions

Little (1987), in her summary of literature pertaining to the "possibilities and limits of collegiality among teachers" (p. 491), outlines six general conditions within schools, or, as she calls them, "dimensions of support" that, taken together, are thought to enhance possibilities for sustained collaboration among teachers. Each of these is described briefly; then, in summary, reference is made to the physical and/or structural conditions leading to teacher isolation that these "institutional supports" seek to counter.

1. Public Endorsements and Institutional Policy

Public endorsement, by leaders at the district and school level, of the "team efforts" of teachers and, in turn, precise descriptions of what such efforts are thought to entail, is considered an important step in encouraging "joint action" among teachers (p. 508). Also viewed as essential, is the provision of opportunities for teachers to work together through "the routine organization of staff assignments, time, and other resources", reflected in institutional policy (ibid).

2. School Organization and Teacher Leadership

As an extension of institutional policy, the organization of a school staff into teams, "each...responsible...for the learning experiences" of a specific group of students, is thought to go "a long way toward permitting cooperative work (among teachers) but does not guarantee it" (p. 509). Certainly, the schedule and staff organization can lead, ideally, to a situation where decision-making, "with respect to scheduling, grouping assignments, and the development of curriculum units or instructional approaches" (ibid), is shared by teachers and administrators alike. However, it is important that teachers feel their decisions carry weight. Otherwise, they may only meet "to resolve routine matters"

but not to discuss "issues that strike close to the heart of daily classroom experience" (ibid).

3. Latitude for Influence

Teachers are said to be more inclined to work together, if there is "some topic of compelling importance" that is "complex enough to make two (or six) heads better than one and to make it probable that the reflected glory of the team will outshine success that each member could expect from working alone" (p. 510). However, for this to happen, as was mentioned above, teachers need to know that their "decisions in crucial areas of curriculum, materials selection, student assignments, instructional grouping, classroom activity and the assessment of student progress" are valued and supported at both the school and district level (ibid). Without such support, teachers will likely restrict any cooperative efforts to matters of a technical, rather than substantial, nature.

4. Time and the Master Schedule

For teachers to engage in collaborative work, the master schedule of a school must accommodate and encourage this activity. Through the allocation of specific blocks of time, "each day or each week", teachers with "students, subjects, or other interests in common" can be assured that

opportunities "to work together" are enhanced by the master schedule (p. 511). Notably, research shows that meetings scheduled monthly or quarterly, are far less effective that those that occur more regularly. To enable "teachers to work on problems of curriculum and instruction with the persistence and regularity needed to achieve continuity and depth or to resolve disagreements", daily, school-wide "morning meetings" seem promising (ibid).

5. Training and Assistance

Since teachers, for the most part, "work... with students...out of sight and sound of others", their ability to work cooperatively with other adults, "is often less polished and practiced" (p. 511). As well, "in a profession in which the norm of not interfering with another teacher's views or practices is powerful, serious and sustained collaboration with regard to curriculum and instruction presents a radical departure" (ibid). Nevertheless, teachers can master certain techniques and develop explicit agreements to govern their work together. Examples of these include, "scheduling regular meetings, using an agenda, prioritizing issues, facilitating discussion, and reaching closure on decisions and tasks" (p. 512). Through the provision of specific training and assistance to teachers engaged in collaborative efforts, the number of groups that succeed in creating "achievements worth celebrating"

(p. 511) may well be enhanced.

6. Material Support

The final "dimension of support" for teachers working together to address issues of common concern is said to be, "the quality and availability of reference texts and other materials, adequate copying equipment, consultants on selected problems, and other forms of material and human support", although these "other forms" are not specified (p. 512). With such material supports firmly in place, "teachers' ability and willingness to work successfully together" is notably heightened (ibid). Alternately, however, when a lack of material resources leads to a severe shortage of "time and inclination for group work" (ibid), teachers are found to refrain from the kind and quality of interactions that might otherwise challenge the predominance of teacher isolation within schools.

Although Little (1987) specifies these six "dimensions of support" for teacher collaboration, on closer examination, a degree of overlap is evident among them. Most importantly, it seems, in order to counter the structural and cultural constraints found to perpetuate teacher isolation, certain "institutional supports" (p. 513) must be in place. Little states that these include: the organization of the master timetable and the teaching staff

to ensure that "opportunity for shared work and shared study (is) prominent in the schedule for the day, the week, and the year" (p. 516); the public endorsement, as well as opportunity to engage in "compelling" and "complex" tasks that can be successfully accomplished only through the combined efforts of two or more teachers working together (p. 510); and the adequate provision of material resources and human assistance, as required, to enable teachers to most efficiently use the time available to them for "the rigorous mutual examination of teaching and learning" (p. 513).

Taken together, these conditions, found to be supportive of sustained teacher collaboration, can potentially counter the structural and cultural conditions known to lead to teacher isolation. For instance, norms regarding the organization of physical space, time, and, authority are offset by those proposed by Little (1987), who asserts that the timetable and teaching staff can be organized to promote "rigorous" collaboration among teachers, rather than detract from it (p. 513). Additionally, norms of individualism and noninteraction are challenged, when teachers are given not only the opportunity and authority to make vital decisions regarding curriculum and instructional matters, but in turn they are regularly engaged in concrete tasks that require two or more teachers to work together to achieve goals that they have set themselves. Furthermore, the classroom-centered focus and

practicality ethic known to exist among teachers, may be offset by a combination of the institutional supports already highlighted. As well, ensuring the ready availability of sufficient resource materials and human assistance is essential, if teachers are expected to explore alternatives to conventional, well-established classroom practices.

Having specified certain conditions within schools known to support rather than impede collaborative efforts among teachers, these conditions can also be said to provide support for the implementation of any innovation that assumes teacher collaboration. However, as has been shown in the review of literature pertaining to school cultures, structural and cultural conditions that perpetuate teacher isolation, rather than collaboration, continue to dominate school life. Consequently, it is unrealistic to presume that any innovation assuming teacher collaboration can be implemented as intended, until the conditions that serve to reinforce teacher isolation are supplanted by collaborative norms. For this reason, it was argued earlier in this chapter, that any innovation that assumes teacher collaboration may be constrained by the culture in which teachers work, and may subsequently be modified by those individuals involved in its implementation, to fit prevalent school conditions.

Numerous questions pertaining to both teacher isolation and collaboration are raised by the literature that examines the culture of schools. This study pursues answers to a few of the questions that can be asked about teacher collaboration within a larger context of teacher isolation. More specifically, questions are asked about a particular innovation; one that implied some form of teacher collaboration around computer use. These questions are as follows: 1) What happens when such an innovation is implemented in a context where teacher isolation is the norm?; 2) What forms does teacher collaboration take?; and 3) What structural and cultural conditions can be said to account for these recurring patterns? Based on the literature cited in this chapter, it is thought that the innovation may be altered to fit the context in which it is used. In turn, this means that teacher collaboration will not assume the form that Little terms "serious" (1987, p. 513); a form of collaboration that would involve explicit and extensive talk around the innovation's use. Instead, collaboration among teachers may be situation-specific and their planning short-term. Both structural constraints (including, the organization of time, space, and authority) as well as cultural ones (including norms of individualism and noninterference, a classroom-centered focus, and the practicality ethic among teachers) may be seen to influence the subsequent forms that collaboration takes.

In the next chapter, the methods used to research these questions are set forth, followed in chapter four by a discussion of the findings.

CHAPTER THREE

METHODOLOGY

This chapter outlines the methods of data collection and analysis. As stated in chapter one, the purpose of this study was to find out what happened when an innovation that assumed some form of teacher collaboration was implemented in a context where teacher isolation is a predominant norm of school life. More specifically, it sought to determine what forms teacher collaboration actually took around the use of computers with ESL students and, in turn, what structural and cultural conditions within the school setting could account for the patterns that emerged.

To examine the forms of teacher collaboration around computer use, I spent time in the computer lab, observing its daily "rhythms" (Lieberman and Miller, 1984, p. 5). During the first few visits to the lab, the assumption that teachers would collaborate around their use of computers to aid students' language and content learning seemed plausible. Unlike most other classrooms in the school, where only one teacher worked with a group of students at any given time, two or more teachers were frequently found together in the computer lab either interacting with students, chatting with one another, or grappling with a project of their own. However, a review of the literature related to the cultures of schools revealed that certain

structural and cultural conditions within schools promote teacher isolation, rather than their collaboration, as a norm. From my review of this literature and visits to the computer lab, an overriding question that served to guide subsequent data collection emerged; that is, what happens when an innovation that assumes some form of teacher collaboration is implemented? To answer this question I observed the forms that collaboration took among those teachers using computers with ESL students in the lab, and also interviewed these same teachers to gain their perspective on the collaborative nature of their interactions. A more detailed explanation of the observations and interviews follows.

Observations

Prior to starting formal data collection, my attendance at two after-school meetings (involving the three resource teachers, ESL department head, two district ESL consultants and two university-based project directors) and two morning visits to the lab, served to reveal the assumption that teachers would work together to coordinate the language and content learning of ESL students using computers. Additionally, this initial period of observation enabled me to gain a sense of the teachers' and students' activities in the lab. Thus, the decision to study forms of teacher collaboration around computer use and in turn, the

conditions of school life that helped and/or hindered teachers' collaborative efforts, was reached through these early encounters with teachers.

Once formal data collection began, I observed thirty-five class periods in the computer lab during May and June, 1990. I made fieldnotes during this time, expanding them at the end of each school day. The majority of these observations would be termed nonparticipant observation (Spradley, 1980) since I was generally not involved in working with the students or teachers. However, on several occasions, I assumed a more active role when asked to provide technical assistance to beginning-level ESL students, many of whom were using computers for the first time.

During this observation period the study population was identified. It included the three resource teachers who were knowledgeable about computers and four ESL classroom teachers who spent at least one class period in the lab when resource teacher support was available. Of the three resource teachers, two were also experienced ESL teachers and familiar with the knowledge framework as a means for designing ESL teaching materials. The four ESL classroom teachers were initially limited in their understanding of computers; two were familiar with using the knowledge framework to create student tasks.

By observing events in the computer lab before interviewing each of these seven teachers, I gained some

sense of their patterns of interaction around computer use before asking them to describe their experiences. I also continued observations in the lab while conducting my initial interviews with these teachers. Thus, I was able to confirm comments that teachers initially made as well as explore issues and themes in follow-up interviews.

Interviews

Initial interviews with the three resource teachers and four ESL classroom teachers were held over a three week period. Two teachers were interviewed the first week, two the second week, and the remaining three in the third week. Flexibility was required to establish the time and place for each interview. Rather than establish an interview schedule committing teachers to a particular date, time and place many days in advance, I arranged interviews one by one, letting the teachers select a convenient time and location. Thus, interview times ranged from a preparation period to lunch time to after school, while the location of the interviews included the computer lab, staffroom, library, music room, and several teachers' own classrooms. Prior to beginning each interview, teachers signed an informed consent form and agreed to the interviews being tape recorded.

In the initial interviews, each of the seven teachers was asked a series of questions to find out what these

teachers understood collaboration to mean and whether or not these teachers felt they had "collaborated" with one or more teachers during the course of the year. Additionally, teachers were asked to describe their interactions with others in the computer lab and to comment on conditions within the school that they believed had either helped or hindered their efforts at collaboration around computer use. These interviews were "semi-structured" (Borg & Gall, 1989, p. 452) A certain number of questions were prepared beforehand, based on the problem that I had defined yet teachers were encouraged to expand on issues and concerns they raised themselves. As well, I encouraged them to clarify and elaborate on particular responses. Following each interview I transcribed the recording and highlighted all comments related to the study's focus.

The first two follow-up interviews were conducted without specific guide questions. However, I quickly realized that time constraints, as well as teachers' expectations of my role as interviewer, inhibited this informal approach to interviewing. For this reason, specific follow-up questions were created for each teacher based on comments made during their initial interviews. These served to guide the second interviews, held with five of the teachers, and the third interviews, held with the two teachers who had earlier engaged in the open-ended follow-up discussion. These interviews were conducted during the two weeks prior to the end of the school year when students were

no longer in classes. Since teachers had more flexibility during the day, interviews could be spaced more closely together. Thus, six were held during the first week and three the week following. Again each teacher selected a date, time, and place that was convenient. Five teachers chose to be interviewed during the school day while the other two were interviewed after school hours. The locations of the interviews again included the computer lab, staffroom, library, and teachers' own classrooms. The purpose of the follow-up interview was to give teachers a chance to confirm, clarify, and/or expand on patterns, themes, and issues that emerged when each of the initial interviews were examined.

When conducting the seven initial and nine follow-up interviews I was conscious of the constraints on teachers' time. A forty-five minute limit was thus set on all interviews. However, the sixteen interviews ranged in duration from thirty to seventy-five minutes.

Analysis

A review of fieldnotes and examination of the first interview transcripts suggested the presence of certain patterns, themes, and issues that were directly related to the focus of study. This initial analysis served to guide the design of questions that were later asked in the follow-

up interviews with teachers. Once these were transcribed, a more extensive analysis of the data was conducted.

Descriptive analysis consisted of examining individual teachers' responses to the specific questions asked in an effort to determine how these teachers chose to describe and account for the form of their interactions with one another around computer use. This analysis focused on the perceptions and beliefs that teachers held about the nature of their collaborative efforts and, in turn, how these corresponded to observations made in the computer lab. Not only did their comments serve to clarify and confirm certain of the patterns of teacher collaboration that emerged through observation, but additionally, they served to provide insight to activities that would not have been otherwise noted.

An interpretative analysis focused on what these teachers' activities and perceptions revealed about the larger context within which they worked. Consideration of teachers' comments and their interactions with one another highlighted the prevalence of structural and cultural conditions that appeared to influence the forms of teacher collaboration.

A discussion of the descriptive and interpretative findings follows in the next chapter. Reference to and direct excerpts from teacher interview transcripts are coded using a letter and number combination. The letters A through G refer to individual teachers. A, C, E, and G are

the four ESL classroom teachers while B, D, and F are the three resource teachers. The numbers 1, 2, or 3 immediately following one of these letters refer to the first, second, or third interview. The second number specifies the transcript page number. For example, use of the code "A1.6" after a comment quoted or paraphrased in the body of the thesis, means that reference to this is found on page six of Teacher A's first interview transcript. Alternately, "G2.9" refers to an idea expressed on page nine of Teacher G's second interview transcript.

CHAPTER FOUR

DISCUSSION OF FINDINGS

Based on data collected through classroom observations and teacher interviews, this chapter describes and accounts for what happened when a curriculum innovation that assumed some form of teacher collaboration around computer use, was implemented in a context where teacher isolation is a predominant norm. While it is acknowledged that teachers did coordinate their work with one another in various ways, this study considers a particular form of collaboration; that which involves joint planning and ongoing discussion to deal with innovation-related problems as they arise. First, an overview is given of several conditions that were in place when the innovation was introduced which reveal the inherent assumption that teachers would collaborate in their efforts to use computers with ESL students. Second, a description of the forms their collaboration was found to take is set forth. Third, prevalent structural and cultural conditions that appear to have influenced the nature and extent of teacher collaboration are examined. In summary, an explanation is offered for why this innovation was adapted to accommodate the school culture.

Expectations of Collaboration

The assumption that teachers would collaborate in some form around the use of computers with ESL students was inherent in the innovation from the start. An indication of this was the provision of scheduled release time for three resource teachers. Out of six blocks of lab time (per cycle) allotted for ESL teacher and student use, five of these had a resource teacher scheduled as well. Two resource teachers were each given two blocks of release time while the third was given one (D1.2/D1.6). It was thus assumed that any ESL classroom teacher who chose to use the computer lab with their students could be assured that a resource teacher familiar with the computers was scheduled to be in the lab at the same time.

A further expectation of collaboration was evident in the installation of computers intended mainly for the use of ESL teachers and their students. As was earlier mentioned, six blocks of time, out of a possible total of eight, were allotted for ESL use; the remaining two blocks of time were for the use of students in another department. Since few teachers in the ESL department had prior computer experience or were familiar with Mohan's knowledge framework as a means to link language and content learning, the opportunity for them to jointly plan and teach computer-based work with resource teacher support was available.

While these conditions encouraged some form of teacher collaboration around the use of computers, neither one alone, nor in combination, could guarantee that this would happen. However, the possibilities of teachers exploring a variety of collaborative arrangements seemed to be enhanced by the provision of the supportive conditions described.

Forms of Collaboration

In this discussion, the term "collaborative" pair refers to two teachers known to have spent time together with a group of students in the computer lab, at least once during the period of data collection. While the extent to / which these teachers worked together varied somewhat with each pair, common patterns emerged. These are summarized following descriptions of the two forms that teacher collaboration took. The first form of collaboration is referred to as an "expert-novice" relationship while the second is termed a relationship among "peers". The labels are based on the extent of teachers' familiarity with computers as an aid to language and content learning. In the "expert-novice" relationship, the resource teacher (RT) is viewed as an "expert" in computer use, while the ESL classroom teacher (CT) is considered a "novice". Alternately, in the relationship among "peers", both teachers have a similar degree of proficiency in terms of

their ability to adapt language and content material for use on the computer.

Expert-Novice Relationships

In an expert-novice relationship, the roles of the resource teacher and ESL classroom teacher were somewhat rigidly defined. Since the resource teacher was considered an "expert", and the classroom teacher a "novice" in computer use, the classroom teacher generally assumed responsibility for stating what she/he hoped to achieve and for providing relevant content information. In turn, the resource teacher assumed responsibility for adapting the classroom teachers' ideas for use on the computer. The distinction in roles assumed by the resource and classroom teachers, respectively, is revealed in words spoken by teachers themselves:

RT: "...the teacher...(would tell) the lab person...what it is they would like to do or what areas they'd like to cover and then (the lab person) would very quickly come up with an idea that might suit that..." (B1.2).

RT: "...I needed to talk to her to say what are you doing? how are you doing it? How many are you doing? what time frames?....she would tell me what she was doing and I would virtually do all of the computer work..." (B2.4)

CT: "...the teacher has to spell out what they want to do and the computer person has to spell out what can be done..." (G1.1)

CT: "...(the resource teacher) asked if I could present him with some ideas...and so I did...again (the resource teacher) has taken them and he made the activity that we did last week..." (C2.6)

CT: "...I was new to MacIntosh so I was bringing my classes in at the beginning and I gave a rough idea of what I wanted to do and....it was up to (the resource teacher) to mould it into something on the computer for me..." (A1.1).

CT: "...I would have an idea of what I wanted (my class.. see B1.3) to do and then we'd start to work from there...how can we put this idea into computers." (A1.8)

On several other occassions, when a classroom teacher had little notion, at least in the beginning, about the computers' capabilities, the resource teacher was the one to "take the reins" (E1.2), keeping the classroom teacher informed about what the students would be doing. One classroom teacher expressed her willingness to have the resource teacher "totally in charge" while she just did what she could (C1.10). In contrast, another classroom teacher wanted to retain control of what her students achieved even though she accepted that the resource teacher would specify and demonstrate the computer skills required (E1.4/E2.2).

As the "expert" in computer use, the resource teacher also assumed responsibility for introducing the computer to the students and for demonstrating new steps as required. Although one classroom teacher made a concerted effort to familiarize both her students and herself with new vocabulary and key steps ahead of time, she nevertheless stated, "I wasn't a lot of help then...I was still trying to figure it out" (E1.2). Another classroom teacher explained, "When I first went in there I was a step ahead of the students all the time...I'd watch what (the resource teacher) did and then I learned it...when (students) asked

me later how to do it I just did what I saw (the resource teacher) do..." (A1.1).

In "expert-novice" relationships, the responsibility for responding to students concerns appeared to be clearly established as well. For the most part, the resource teacher attended to student questions related to the operation of the computer while the classroom teacher concerned her/himself with language and content matters (F2.4/C1.4/E2.4). An example of this is cited by one resource teacher who mentioned an occasion when he "was spending quite a bit of time trying to figure out why (the students) couldn't (use the paint tools correctly), what went wrong, putting (his) disk in their machines and giving them another try" (F2.4). Meanwhile, the classroom teacher was able to assist students with aspects of the task related to both language and content. The resource teacher ended his account of this event saying, "I think that's part of the importance of having two people in here...you know there are different parts of the brain used...there's a lot of cognitive load if you're doing everything" (ibid).

An exception to this apparent division of labour among "expert-novice" pairs, occurred when the computer program designed by the resource teacher involved only several basic procedures deemed "straightforward" (G1.3) and "very simple" (G1.4) by the classroom teacher. As it turned out, the original emphasis on learning the computer quickly shifted to what she felt was an entire emphasis on language (G1.9).

Since the classroom teacher seemed not to have discussed her expectation that the students would learn more about the computer than they did (G1.2/G2.4) or that the resource teacher would assist the students (G1.5), she chose to return to her own classroom once she realized that the resource teacher's "agenda of how things ought to be done" differed from hers (G1.2).

Another classroom teacher said that the resource teacher was not as available as he would have liked (A2.5). However, he could still address many of his students' computer-related concerns because of having worked in the lab on other occasions, as well as having spent time learning to use the computer after school and on weekends (A1.5). Additionally, he had earlier participated in an intensive computer workshop and created the computer stack that his ESL students were using. Thus, only when specific problems arose that he could not deal with, did this teacher request assistance from the resource teacher. However, if he was not in the lab at the time, this classroom teacher found he had to wait for him to return (ibid).

Ultimately dependent on the resource teacher to assist with certain computer-related concerns, the relationship between these two teachers could be said to have assumed an "expert-novice" form. Yet, in the working relationship among these two teachers, unlike that of other "expert-novice" pairs, the classroom teacher was not dependent on the resource teacher to adapt his ideas for use on the

computer nor did the classroom teacher require support to introduce or demonstrate new steps to his students. While this classroom teacher said he would have liked more assistance from the resource teacher in responding to students' computer-related questions and in helping with the design and creation of additional ESL computer "stacks", this did not happen (A2.5). Still, the classroom teacher found he knew enough about computers to continue to bring his students to the lab, with only minimal resource teacher support.

The form of collaboration that thus ensued among these two teachers, does not directly coincide with the descriptions of "expert-novice" relationships presented earlier. Instead, their working relationship may be said to represent another form of collaboration that was also observed among resource and classroom teachers scheduled to work together in the lab. This alternate form of collaboration can be said to comprise a relationship among "peers". A description of the form that this relationship was found to take is set forth in the discussion that follows.

Peer Relationships

A "peer" relationship among a classroom and resource teacher is said to exist when both teachers scheduled to be in the computer lab together, are considered competent in

their ability to adapt content materials and ideas for computer use, as well as in their ability to introduce computer procedures to students and respond to any concerns. Generally, "peer" relationships were found to occur when two resource teachers were in the lab at the same time, although this was not always so, as the previously cited example showed. However, when two resource teachers were in the lab together, one resource teacher actually assumed the role of a classroom teacher since they chose to bring a group of their students to the lab at a time when no other classroom teacher requested to come. In turn, the other, scheduled resource teacher was there to act as a "consultant" (F1.6/F1.14) or "teaching assistant" (D1.4).

In contrast to "expert-novice" relationships, where the classroom teacher provided the resource teacher with ideas and content information that were then adapted for computer use, in a relationship among "peers", the classroom teacher decided not only what the students would do, but additionally, how this was to be achieved through the use of the computer. The resource teacher was then found to choose one of two options. Either, he assisted the classroom teacher in achieving the goals that had been set or, alternately, he waited until specifically asked for assistance with computer-related problems.

Describing the former option, one resource teacher explained, "Basically, (the classroom teacher) is in control because he knows as much about computers as I do, if not

more so...I just act as a teaching assistant...he says this
is what we're going to do and I try to keep (the students)
on task...." (D1.4). On another occasion this same teacher
clarified his role, once again, stating, "It was more like I
was a teacher's assistant (to the classroom teacher)...
cause I knew he had a handle on whatever content he was
trying to get across...He was also my equal, or higher, in
terms of the (computer) and it's little idiosyncrasies, so I
was just there to assist..." (D2.4).

Alternately, there were instances of "peer"
relationships where the provision of such assistance to
students in their work with computers was lacking. One
classroom teacher, speculating on the reasons for this,
explained: "I think (the resource teacher) takes advantage
of the fact that I know the computer and it's usually a
small group of kids so....he's there when he wants to be..."
(D1.4-5). Another classroom teacher stated that the
resource teacher was "never there" when he brought his
students to the lab earlier in the year (F1.14).
Nevertheless he optimistically claimed, "I learned a lot
having to operate in there by myself with kind of spotty
knowledge..." (F1.15).

While this resource teacher may not have been in the
lab to provide ongoing support for certain classroom
teachers and their students, according to one of these
teachers he worked in "intense bursts" when specific help
was required or when the resource teacher "had a new idea"

he wanted to share (F3.5). A second classroom teacher confirmed this saying that the resource teacher readily provided technical assistance when asked (D1.9/D2.5). Additionally, he was seen as "the one that brought most of the new information about the computer into the lab....mostly they were ideas....little bundles of software that....gives you another source of ideas on how you might want to present information" (D2.6).

Another form of idea sharing occurred among a resource and classroom teacher who worked together in the lab more regularly. Much of what these two teachers did was described by one of the teachers as "exploratory" since it was said to involve "wondering together (and) speculating" as both teachers sought "to find out the same things" related to instruction (F3.3). Their discussions focused, for example, on ways that software could be structured to make it "more accessible or appropriately challenging" for students (F3.7); on "the order of priority of teaching certain skills"; or, on how to achieve a "balance between computer-related learning and content and design" (F3.3). Since both teachers had "roughly the same number of ideas about what to do" in the computer lab, any distinction in roles between that of "consultant" and classroom teacher tended to blur with time (F1.6). Unlike what happened in an "expert-novice" relationship, in this relationship among "peers", the resource teacher found that he "didn't have to have that computer resource role" (D2.4).

In "peer" relationships where both teachers were considered competent in their ability to adapt content materials for use on the computer, and both were able to address students' language, content, and/or computer-related concerns, as well as to demonstrate new steps in computer use, ultimately, the classroom teacher determined what students would achieve during their time in the lab. When the resource teacher was more actively involved with teaching activities, he assumed the role of an "assistant" in the lab. As such, the resource teacher responded to numerous requests for help from both the classroom teacher and students. Additionally, he offered suggestions that a classroom teacher might decide to follow through on (D2.10-11/A2.2). In "peer" relationships responsibility for creating computer-based language and content learning activities lay with the classroom teacher. The resource teacher, as a "peer", at times offered support in the design and creation of materials for use on the computer. In the case of "expert-novice" relationships such support was more generally guaranteed.

Emergent Patterns

In comparing and contrasting "expert-novice" and "peer" relationships among teachers, common patterns emerged. These included: 1) one-on-one encounters among teachers; 2) informal and brief meetings; 3) short-term planning; 4)

implicit roles and expectations; and 5) a focus on computer-related concerns. In the following discussion, each of these patterns of interaction is described. When appropriate, mention is made of any differences that occur between "expert-novice" and "peer" relationships, although notably the similarities between these two forms of collaboration are more prevalent than their differences.

1. One-On-One Encounters

Whether resource and classroom teachers found themselves engaged in either an "expert-novice" or "peer" relationship with one another, a common trend emerged; that is, teachers worked with one another in pairs. Each classroom teacher who chose to bring their students to the lab established some form of interaction with the scheduled resource teacher. As was earlier mentioned, it was generally the classroom teacher who determined what content and language ideas would be conveyed through the use of the computer. Only when a classroom teacher had little notion of the computers capabilities did an exception to this occur. In the case of "expert-novice" relationships, the resource teacher assumed responsibility for adapting the classroom teachers' ideas for use on the computer, whereas in "peer" relationships the classroom teacher was able to do this alone. In the latter situation, the resource teacher was then able to offer further assistance to the teacher and

students in their work on the computer, or alternately, to focus on other more technical concerns. Both options were found to occur.

The pattern that emerged then was not one of a single coordinated effort involving all participants in discussions regarding a program for general use (B2.15). Rather, each classroom teacher, frequently in consultation with a resource teacher, came up with their own "class specific" activities (G2.3). The interests and strengths of the resource and classroom teachers, the language level of the students, and the time available to work in the lab were all thought to contribute to the choices made (F1.1). Thus, each group of students used the computers for something different. Tasks ranged from writing autobiographies, story reports and projects about the solar system, to labelling maps, describing European countries, creating charts and identifying, as well as classifying types of bees and house flies.

2. Informal and Brief Meetings

Informal and brief meetings for planning purposes was another common pattern that emerged with both "expert-novice" and "peer" relationships. Teachers spoke about informal exchanges before class to discuss lesson plans. According to one classroom teacher, "it was very casual in the coffee room...what are we doing today?" (E1.2). Another

teacher reported that she and the resource teacher discussed their plans "in two minutes before three different classes" (G2.2). Several other teachers also spoke about having to meet during "the five minutes between classes" (B1.2) although even that amount of time could be reduced to "one minute or thirty seconds" when teachers had to move from one classroom to the next (C2.6). Conversations at "lunch" (A1.8) or when two teachers happened to "see each other" were also said to provide opportunities for computer-related discussion (A1.9) concerning, for example, what had or had not worked during a particular lesson or what might need further work (E1.6). However, such encounters were not regularly scheduled (A1.11). While one classroom teacher expressed her desire to learn how to build "tasks related to the knowledge framework and...to the computer" (C2.9) she found there was no time for this. Instead, meetings between teachers, more often than not, were "really informal" (E1.2) and "on the fly" (B1.17/B2.11/C2.5).

Among the resource teachers, no one felt the need for regular, scheduled meetings (F3.6/D1.8/B2.10). Instead, spontaneous, informal exchanges were considered preferable since, in the words of one resource teacher, it was "unpredictable" when teachers might "need to consult" (F3.6). Nevertheless, he claimed, if they needed to, they would and did (ibid). According to a second resource teacher, no review sessions were scheduled regarding teaching in the lab because that was the way people involved

wanted it (D1.8/D1.11). As he stated, "(we came) to our own sort of system" (D1.11). Later, he further explained that there was an absence of formal meetings because "...the people involved...(are) not people who go to meetings or...people who stick to agendas at meetings" (D3.4) Thus, even if meetings were held, he did not expect much to be accomplished (ibid). A third resource teacher stated his preference for "faster meetings" (B2.1/B2.16) since he was more concerned with teachers getting into the lab to use the computers that were there (B1.17).

One of the classroom teachers who also commented that there were no regular, scheduled meetings to discuss the use of the computer, as a group or in pairs, attributed this to the "loose" (A2.8), "relaxed" (A2.9) nature of the ESL department and accepted "it's just the way it seems to be" (A2.8). Rather than having set meetings to discuss various aspects of the computer's use, participating teachers were said to have "developed an informal way of talking with each other" (A2.9). After an initial focus on the computer lab during ESL department meetings early in the year, teachers depended on informal exchanges with one another to "get an idea (about) what different people were doing" (A1.11).

3. Short-Term Planning

Short-term planning was characterized by teachers meeting to discuss their lesson plans during the few minutes

between classes and depending on encounters in the hallway, staffroom, or cafeteria for this. According to one teacher, little attempt was made to establish "a long range plan for the lab in terms of (what teacher would come) during what period of time" (D3.4). Instead, decisions regarding classroom activities tended to focus on "immediate" (F2.2) concerns. As one classroom teacher stated, it was "more of a free-for-all...for us to get in a time. People who were less intimidated by computers...got in there first" (E1.1). Once in the lab, a classroom teacher established a one-to-one working relationship with the scheduled resource teacher. It was mentioned that these "class-specific" encounters (G2.3) did not generally allow for the discussion or development of more "complete" packages that teachers coming to the lab in future years might use (D1.3/D3.4), or the development of materials that could benefit all classroom teachers (B2.3).

4. Implicit Roles and Expectations

Also noted in terms of the resource and classroom teachers' use of computers to enhance content and language teaching for ESL students, was little explicit discussion pertaining to teachers' roles and their expectations regarding computer use. Although the roles that various classroom and resource teachers assumed were described earlier in this chapter, these were apparently not adopted

on the basis of any discussion regarding the nature of either the innovation or collaboration. Rather teachers seemed to adopt a particular role according to their expertise, or lack of it, regarding the technical use of computers. While several teachers in "expert-novice" and "peer" relationships interacted only minimally, alternately others chose to interact somewhat more. In turn, differences occurred in terms of the assistance offered to students.

For some teachers, the contrast between their expectations regarding the role of the resource teacher and what the resource teacher actually chose to do, caused concern. One classroom teacher, for example, expected the resource teacher to take a more "active role" in the design and creation of ESL materials for use on the computer. However, this classroom teacher was disappointed when the resource teacher "never offered to help even though he kept saying...bring (your class) in sometime" (A2.5). When this teacher eventually did bring his students to the lab, the resource teacher was said to have done "almost nothing with them". The classroom teacher went on to say, "I thought he was going to be the one who would do the lesson...and then it was like, dead" (ibid). A second classroom teacher expressed her expectations regarding the resource teachers' role when she said, "I feel the person in (the computer lab) needs to be able to respond to student questions...they're helping with the class as such" (G1.5). She also would have

liked the resource teacher to have helped her gather resources in the way a teacher librarian does (ibid). However, neither of her expectations were met since she apparently did not discuss them with the resource teacher. Instead this teacher found that the resource teacher "wasn't really (in the lab) much...and when he was...he was working on the computer" (G1.4).

Several other comments further indicate the implicitness of their roles and expectations. For example, one resource teacher, attempting to account for the roles that he and a classroom teacher assumed in the lab, stated, "so much just happened...it happened naturally" (D2.4). According to this teacher, "it would have been hard to plan for it because we really have no experience dealing with the computer lab....it's such a new thing" (ibid). This classroom teacher also spoke about being able to work "intuitively", further stating there was no need to consciously divide the work between the resource teacher and himself (F2.5). A third teacher speculated that his long-standing friendship with another teacher enabled the quick resolution of any concerns regarding their roles and responsibilities. As this teacher explained, "...he knows things that I do...I know things that he does so there are many things I would just leave to him cause I know he'll do the better job of them..." (B1.3). From the varying degrees of interaction among "collaborative pairs" observed in the lab and described by teachers themselves, there was an

indication that some teachers' perceptions of their function in the lab differed.

5. A Focus on Computer-Related Concerns

Regardless of the extent of interaction among resource and classroom teachers, another commonly emerging pattern was a recurring focus on computer-related matters. Teachers engaged both in "expert-novice" and "peer" relationships, appeared concerned with discussion for the purposes of addressing computer-related questions and concerns more than with addressing other key aspects of the innovation. In the case of "expert-novice" relationships, where classroom teachers lacked a sufficient understanding of computers to bring their students to the lab without support, a working relationship with a resource teacher was necessarily established. However, once a classroom teacher provided the initial ideas for student activities, the resource teacher undertook to adapt these for computer use with little, if any, further discussion about the choice of subject matter (F1.4/G1.9). A resource and classroom teacher might only meet briefly before a class to review the computer tasks that the resource teacher had designed (C2.4) or to specify the steps in computer use students would have to learn in order to complete the activities that had been prepared (G1.2).

In contrast to the role assumed by classroom teachers in "expert-novice" relationships, classroom teachers in "peer" relationships were able to adapt content and language learning activities for use on the computer, themselves. Furthermore, they were able to respond to students' computer-related concerns as well as demonstrate the various steps in computer use. Thus, assistance from a resource teacher was required only when a computer-related problem arose that a classroom teacher could not deal with alone (D3.2/A1.5). While these teachers also shared ideas with one another when someone had new software to show (F3.6), there was no mention of extensive discussion pertaining to the relevance, or possibly irrelevance, of such ideas. The words of one resource teacher describe how such "sharing" most commonly occurred. As he explained, "the most impressive communication...would be when somebody made something new and they'd show it and that would often just involve putting it in the hard drive and saying have a look at this file next time you're in (the computer lab) and then two days later (the person would respond by saying) oh I saw that, it's pretty cute but this and this and this and that would be the end of it" (ibid).

Generally, conversations among various "collaborative" pairs tended to emphasize the sharing and/or acquisition of computer-related information. Thus, a classroom teacher who acquired a certain level of comfort and understanding in

their computer use could be found working in the lab without resource teacher support.

Teacher Collaboration:
The Influence of Prevalent School Conditions

As mentioned earlier in this chapter, several structural conditions were firmly in place when the computer lab first opened its doors for the benefit of ESL teachers and their students. These conditions revealed an inherent assumption that teachers would collaborate in some way around the use of computers to enhance language and content teaching for ESL students. The first of these was the provision of scheduled release time for three resource teachers; the second was the installation of computers that were intended mainly for the use of ESL teachers and their students. Since few teachers had prior computer experience or experience using Mohan's knowledge framework as a means to link students' language and content learning, most of the ESL classroom teachers wanting to use computers as a teaching aid required resource teacher support.

Certainly these conditions were conducive to increasing the possibilities for teacher collaboration around computer use. If neither were in place, it is unlikely ESL teachers would have had any incentive to leave the sanctity of their classrooms to work collaboratively in the lab. However, descriptions of the forms that teacher collaboration took

and the patterns that emerged when these "expert-novice" and "peer" relationships were examined, hint at the prevalence of other structural and cultural conditions in the larger school context that limited opportunities for teacher interaction. These same conditions, earlier highlighted in the review of literature chapter, included the ways that physical space, time, and authority were organized within the school setting; the predominance among teachers of norms of individualism and noninteraction; their tendency to focus on the "immediacy" of the classroom; and, closely linked to this, their adherence to an ethic of practicality. In the following discussion, each of these conditions is shown to more commonly promote teacher isolation, rather than sustained collaboration around the use of computers with ESL students.

Structural Conditions: The Organization of Physical Space

The organization of physical space within this particular high school, like so many others, was typical of what Lortie (1975) refers to as "egg-crate" architecture where each classroom is distinctly separate from the next. An ESL classroom teacher wanting to use the computers as a tool to promote language and content learning brought her/his students from their regular classroom to the computer lab or else arranged to meet them there, during a time when resource teacher support was available.

Alternately, two resource teachers used the computer lab as their regular ESL "classroom" during two periods when a resource teacher was scheduled to provide assistance. Thus each assumed the role of a classroom teacher during these times. These teachers also shared the lab as their common home base (D2.11) for a portion of the year because of a shortage of classroom space in the school building (F1.14). Although both taught in other rooms at various times of the day, they kept their files and personal belongings in the computer lab.

The provision of an actual physical space where two teachers would meet for a specified period of time each cycle, and, in some cases each day, supported the one-on-one encounters common among teachers, regardless of whether they were engaged in "expert-novice" or "peer" relationships. At least assured of the opportunity to share the same physical space as another teacher, if only for a limited time, meant the potential existed for some discussion pertaining to the objectives both sought to achieve in the lab. However, as one resource teacher pointed out, even though two teachers were there at the same time, they were unable to chat at any length while one, the other, or both were involved with an on-going lesson (B2.2). Furthermore, at the end of a class, both teachers usually had other classes or students requiring their attention and so they would leave for other rooms in the building, only to perhaps meet again, briefly, between class periods (B1.1).

Yet, another difficulty with the school's organization of physical space, more generally, arose when one teacher wanted to contact another during the course of a school day. This problem was magnified when both were "floating teachers" since neither had a permanent classroom and moved "from class to class all over the school" (C2.9). Apart from the one period that they shared in the computer lab, most teachers' paths did not often cross (C1.15). In some cases, when a teacher wanted to talk with another about an upcoming lessons this entailed having to walk "four floors, almost two blocks" to reach them (C2.6). By the time this distance had been travelled, only seconds would remain before the next class began. Still, these brief moments between classes were the few they for exchanging information and ideas.

Certainly the provision of a physical space where a resource and classroom teacher would meet while a class was in progress, potentially enabled them to engage in more lengthy one-on-one encounters. Yet merely sharing such space did not guarantee extensive discussion pertaining to their work together. Even the two teachers who shared the computer lab as their common classroom and claimed they talked (D2.11) and worked together a lot when there at the same time (F3.4-5), were constrained in their collaborative efforts by other prevalent school conditions. One of these was undoubtedly the way that time was organized. A

discussion of its influence on the forms and patterns of teacher collaboration around computer use, follows.

Structural Conditions: The Organization of Time

The provision of scheduled release time for three resource teachers was another structural condition with the potential to promote teacher collaboration around the use of the computers with ESL students. During five of the six blocks of time allotted for ESL teachers' and students' use, any ESL classroom teacher who brought their students to the lab could be assured that a resource teacher would be available to provide technical assistance and, in some cases, take charge of adapting language and content activities for students' use on the computer. Knowing that a particular resource teacher was scheduled to be in the lab at a specific time led to a situation where ESL classroom teachers arranged to work one-on-one with the resource teacher who was there for the class period they chose to come. However, as was already mentioned, these one-on-one encounters varied in their focus depending on whether the teachers were engaged in an "expert-novice" or "peer" relationship, and they varied in the extent of interaction among teachers. Thus, providing release time for three resource teachers to assist ESL classroom teachers and their students during scheduled class time in the lab, did not ensure sustained collaboration around computer use. Instead

the organization of time within the larger school setting appeared to impose numerous constraints that hindered teachers' collaborative efforts.

Simply put, as noted by an ESL classroom teacher, "schools aren't set up for talking" (G1.7). Resource and classroom teachers alike repeatedly mentioned that they found it difficult to find time to discuss and reflect on what was going on in the lab (F1.9/F1.17/D3.3/B2.8/C2.9) since opportunities were limited for them to establish their objectives prior to a classroom teachers' arrival with her/his students (D1.3/G1.2/G1.6/C2.11). Such limitations may be linked to the organization of the school timetable which, in the words of one resource person, "locked (teachers) into a classroom setting" almost every hour of the school day (B2.3). Furthermore, the master timetable did not enable teachers to use their preparation periods to meet with one another, since rarely, if ever, did their `prep' periods overlap. More common was the situation that one teacher described. According to him, "when you want to talk to another teacher that person's in a classroom and then the next hour they're available but you're not" (ibid). Thus, if teachers were to jointly plan, implement, and evaluate class activities in the computer lab, effort would be required on the part of both to find time in an already crowded schedule (C2.8-9/G1.6/B1.10/B1.20). Since time was not available for teachers to routinely sit down for planning purposes (C2.6/G1.7-8/A1.9/B2.12), several teachers

suggested that arrangements could have been made to meet at lunch, or after school (G1.6/D3.3). However, lunch times were often taken up with student supervision, student counselling, department meetings, and/or lesson preparation. In turn, many teachers were not prepared to stay after school because of "other commitments" (G1.7/D3.3) or simply because "everyone is pretty well bushed and just wants to go home" (B1.16).

Realizing that teachers work in an environment where the organization of the master timetable confines teachers to a classroom setting where they are expected to interact with students for the vast portion of any given day, begins to explain the patterns that emerged when the forms of "collaboration" among resource and classroom teachers were examined more closely. Although three resource teachers were given scheduled release time to assist ESL teachers in their use of computers to enhance students' language and content learning, a corresponding time was not available to these same classroom teachers. Thus, classroom and resource teachers were found to meet informally between classes to discuss lesson plans. As well, the time constraints imposed on resource and classroom teachers may have led them to focus on computer-related concerns since these could generally be dealt with in less time than could those issues pertaining to curricular and instructional matters. Examining the organization of time in an attempt to suggest why teachers collaborated as they did, offers a partial, but

not final explanation. For this reason, discussion now turns to a third structural condition, the organization of authority, and its influence on teacher collaboration.

Structural Conditions: The Organization of Authority

While the organization of authority within a high school setting can be generally described as hierarchical, the relationships among those within this hierarchy, including the principal, vice-principal, department heads and teachers, tend to be loosely coupled. Even though teachers are seen as ultimately accountable to the school principal for any decisions made and/or actions taken, in their own classroom teachers exercise considerable control over their choice of curriculum and methods of instruction. In contrast, any supervision and evaluation of their work is minimal.

At the high school where this study was conducted, the hierarchical organization of authority was firmly in place, as observation and certain teacher comments made "off the record" revealed. Also evident was the loosely coupled nature of the relationships among those teachers involved in using computers with students. Although three teachers were given the status of "resource teacher", thus distinguishing them from the other ESL teachers who came to the lab, their authority lay in their expertise in computers and computer instruction rather than in any power, or "right to enforce

obedience", invested in them. In "peer" relationships where the resource and ESL classroom teacher both had the ability to adapt language and content materials for use on the computer, the ESL classroom teacher determined what students would learn as well as how the computer was to be used to achieve the goals they set. The resource teacher was not found to "take charge" as such, but rather chose to act as a "teaching assistant" (D1.4) or else respond to requests for technical assistance as required (D1.9/D2.5). In "expert-novice" relationships, the resource teacher was the one to assume responsibility for adapting classroom teachers' language and content ideas for computer use since they lacked sufficient computer knowledge to do this themselves. Nevertheless, each classroom teacher still maintained responsibility for what her/his students would be taught.

Further reflecting on the organization of school authority, where teachers are generally in charge of their students' activities, working in the computer lab with a resource teacher might understandably have been perceived, by some, as involving a loss or transfer of control (D2.12). Yet, no ESL classroom teacher ever relinquished complete control over their students language and content activities. Even those who found themselves learning about the computers along with their students, still assumed responsibility for specifying what it was they would do. In turn, the resource teacher retained responsibility for adapting the materials these "novice" teachers provided, accepting, without any

apparent question or lengthy discussion, a classroom teachers' choice of content. Also common to both "expert-novice" and "peer" relationships, was the tendency of resource teachers to focus on computer-related concerns leaving questions pertaining to curricular and instructional matters in the classroom teachers' hands.

As with the organization of physical space and time, consideration of the organization of school authority offers a partial explanation for some of the emergent patterns of teacher collaboration. Yet, it is once again emphasized that regard for only one aspect of school life lacks the additional insight provided by examining a number of predominant school conditions. Thus, consideration is given to several cultural conditions believed to have further influenced teacher collaboration around computer use.

Cultural Conditions:
Norms of Individualism and Noninteraction

An examination of the teaching schedules of both resource and classroom teachers, indicates that teachers never spent the bulk of their time working with another in the computer lab. During any given cycle, an ESL classroom teacher might come to the lab for one period out of seven, while resource teachers, at the most, were available to work with classroom teachers and their students for a maximum of two class periods. Even though a resource teacher was

scheduled to be in the lab, this did not necessarily mean a classroom teacher and her/his students were also there. For instance, during the observation period, two blocks of time, out of the five blocks scheduled to have resource teacher support, were used only on occasion. Of the three blocks of time regularly filled, two out of these three were used by two different resource teachers who brought their ESL classes to the lab when assuming the role of a classroom teacher. Thus, both resource and classroom teachers alike were found to spend the major portion of their teaching time working alone in a classroom with their students. The schedules of ESL classroom teachers, especially, appeared to include numerous other activities apart from bringing one of their ESL classes to the computer lab.

Limited in their contact with one another for much of each day and generally left free to decide not only what they would teach but how, teacher norms of individualism and noninteraction appeared to prevail. Although the complex interplay of knowledge, beliefs, values, assumptions, and expectations that comprise these norms are intangible, they are revealed through teachers' words and actions. Certainly, the provision of scheduled release time for resource teachers and a lab with computers intended mainly for the use of ESL teachers and their students permitted encounters among teachers that would not have been possible otherwise. However, closer examination of teachers' interactions and of comments they made regarding their

collaboration around computer use, suggest that norms of individualism and noninteraction were not left at door when resource and classroom teachers arrived in the lab.

Individualistic tendencies among these teachers may have contributed to a situation where the classroom teacher retained control over curricular and instructional decisions regarding language and content learning. While the resource teacher assisted with adapting materials for computer use, notably this was only done when required, as in the case of "expert-novice" relationships, or when specifically requested. Generally, in "peer" relationships where the classroom teacher was able to adapt these materials himself, the resource teacher might act as a teaching assistant or share new software ideas. Thus, these teachers' interactions focused on sharing and acquiring computer-related knowledge as opposed to more extensive discussion, regarding, for instance, the implications computer use may have for teaching language and content to ESL students.

Cultural Conditions: The Immediacy of the Classroom

As with norms of individualism and noninteraction, the tendency among teachers to focus considerable energy on pressing classroom demands, appears to have been perpetuated by structural conditions that reinforce the priority of teachers' interactions with students and restrict their interactions with one another. Although several structural

conditions were in place that created possibilities for teacher collaboration around computer use, when a resource and classroom teacher were scheduled to work together, they were in the company of ESL students who required and expected attention from one, if not both, teachers. Teachers' adherence to beliefs, values, assumptions, and expectations that give precedence to their interactions with students, is again reflected in their comments and actions.

According to one resource teacher, for an ESL classroom teacher to decide to bring students to the computer lab in the first place "...they have to see value in (it)" (B1.10). However, he pointed out that teachers who are "already bogged down in what they are doing" (B1.20) are not likely to give up classroom time to the computer lab since this may hinder their attempts to cover the curriculum and may place an extra burden on schedules that are already full (B1.9). Another perspective on why ESL teachers might not rush to bring their students to the computer lab was offered by a classroom teacher who explained her reason for not coming with students at the start of the year. As she said, "...none of my students if I have a beginning level class are ready to go in the computer lab until they've been here three months...I just think I need them for three months to instill let's come with our books, let's come with our pencils, what do we do when we come into a room?...how do we treat a computer?" (E2.7). Regardless, however, of whether teachers' concerns lay with the curriculum that had to be

covered (B1.9), with attempts to orient students to their new school (E2.7) or both at the same time, these comments revealed teachers' preoccupation with their responsibility to students. For some teachers this may have led to an avoidance of the lab altogether (B1.10). For others, such a preoccupation might have further contributed to the patterns of activity that occurred among those who engaged in collaborative efforts around computer use, after all.

One-on-one encounters among resource and classroom teachers appeared to be particularly favorable for those in "peer" relationships since, they enhanced teachers' opportunities to respond to students' questions and concerns. This was said to be especially advantageous when students were first introduced to the computers and needed "a lot of help and guidance" (A2.3). As one resource teacher noted, "when you have two people in the lab who know what they're doing in terms of content and method it's almost not work..." (F2.4). A second resource teacher, reiterating this belief, stated, "...the job becomes half as tough because for every two problems the other teacher (can) answer one" (D3.3). In contrast, responsibility for responding to students computer-related concerns could not be readily shared in "expert-novice" relationships. Still, irrespective of whether one or two teachers were involved in assisting students around computer use, their focus was primarily on directing students' activities and addressing any problems that arose.

Any student questions pertaining to computer use seemed to far outweigh those pertaining to language and/or content matters. Thus, informal and brief meetings among teachers, whether before, during, or after class, seemingly enabled those in "peer" relationships to deal with any individual problems they had with their use of the computers (B2.10). For those teachers in "expert-novice" relationships, these encounters served to reassure the classroom teacher that their students would have work to do in the lab (F1.4).

Cultural Conditions: An Ethic of Practicality

Linked to these teachers' concern for pressing classroom matters was their seeming adherence to an ethic of practicality. This classroom-centered focus is thought to continually reinforce the value that teachers' place on innovations or proposals for change deemed practical, concrete, and congruent with established classroom practice. Alternately, teaching ideas that are unclear and do not fit with their own situation may be rejected, if not significantly modified.

Teachers' concern for practicality was evident in the scarcity of specific discussion pertaining to the knowledge framework as a way to create teaching units for ESL students on the computer. Those few teachers who had prior "exposure" to (F1.9) and an understanding of how the knowledge framework could be applied to the design of

student tasks on the computer were found to tacitly incorporate key aspects of the knowledge framework in their work. Others were said not to have expressed much interest in discussing how this method of organizing language and content learning was appropriate to their situation (F1.10). The words of one resource teacher offer a possible explanation for this. As he commented, "...it's not clear what you should do with them (meaning the six boxes which together constitute the knowledge framework)...and that's what (teachers) want to know...and I don't have an answer for that" (F1.9). For this teacher the knowledge framework was "not a starting place" (F1.8) although he mentioned that he thought it was useful as a means for checking what type of language was being learned and in turn what "gaps" needed to be filled at some later point in time (F1.10).

The complexity and abstract nature of the knowledge framework appears to have been such that even a classroom teacher familiar with its classroom application, still expressed the desire to "know more about building tasks related to the knowledge framework and (about) building tasks related to the computer" (C2.9). Yet the constant demands of classroom life did not allow for any lengthy dialogue about these matters and so this teacher gave almost complete control to the resource teacher over decisions regarding the selection and adaptation of student tasks for the computer (C2.4). Teachers appeared to focus their concerns on sharing computer-related information. The form

of their encounters may indicate a preference for teaching ideas perceived to be straightforward and immediately applicable rather than those that require extensive discussion and/or clarification prior to use.

Summary: The Accommodation of The Innovation to Fit Prevalent School Conditions

This chapter began with an overview of the conditions in place that revealed the assumption teachers would collaborate in some way around their use of the computer with ESL students. However, the descriptions given of the nature and extent of collaboration among teachers who were engaged in "expert-novice" and "peer" relationships, indicated that their verbal interactions were concerned with immediate pedagogical concerns. The recurrence of brief, informal exchanges among teachers typically involved in one-on-one encounters; their short-term planning; the implicitness of their roles and expectations; and their tendency to focus on computer-related concerns, may point to the influence of prevalent school conditions on their implementation of this innovation.

From the data collected, it appears that structural and cultural conditions within the larger school setting restricted opportunities for a particular kind of teacher collaboration, involving ongoing discussion and mutual planning around computer use. The provision of scheduled

release time for three resource teachers to support the work of ESL teachers and their students in the lab, as well as the provision of computers and class time intended mainly for their use suggested the importance of collaboration since these supportive conditions begin to work against those structural and cultural conditions that promote teacher isolation. However, the organization of physical space, time, and authority within the larger school context, as well as teachers' beliefs and expectations about collegial interaction, appear to have contributed to the forms of teacher collaboration noted. Thus, the findings of this study reveal that the possibility of teachers jointly planning knowledge framework units on the computer was not realized in any elaborate fashion. Even those teachers with a shared understanding about what this entailed, focused their discussions mainly on computer-related, rather than curricular and instructional, concerns.

In the following chapter, the conclusions reached as a result of this study are set forth. Additionally, implications of the findings for those involved in curriculum implementation are discussed, and directions for further research suggested.

CHAPTER FIVE

CONCLUSIONS AND IMPLICATIONS

In this chapter the findings presented in the preceding chapter are discussed in the light of the literature review. Since this study focused on a particular type of collaboration (one that involves ongoing discussion and mutual planning), reference is made once again to prevailing school conditions found to promote teacher isolation. As well, the "institutional" structures that Little (1987) deems supportive of sustained teacher collaboration are further mentioned. Taken together, these may be seen to provide insight to the problem that this study sought to address; that is, what happens when an innovation that implies some form of teacher collaboration is implemented in a context of teacher isolation? Several implications of these findings for those involved in planning and providing support for an innovation's implementation are also set forth. Finally, suggestions are given regarding directions for further research.

Conclusions

This study set out to determine what happened when an innovation that assumed teachers would collaborate in some way around the use of computers for language and content

learning, was implemented in a high school setting where structural and cultural conditions support teacher isolation. Two specific questions were asked: 1) what forms does teacher collaboration take in such a context? and 2) What structural and cultural conditions can be said to account for these? Through observation in the computer lab over a four week period and interviews with the resource and ESL classroom teachers involved, some answers to these questions were obtained. Resource and classroom teachers were found to engage in two forms of collaboration around computer use seemingly dependent on the extent of their computer knowledge. Rather than extensively discuss matters pertaining to the nature of the innovation and its broader implications for ESL teaching, teachers generally limited their brief, informal exchanges to practical, computer-related concerns. The recurrence of these patterns, regardless of whether teachers were engaged in "expert-novice" or "peer" relationships, provided some evidence of the influence of school conditions that made sustained teacher collaboration difficult.

The findings of this study indicate that particular types of collaboration may be difficult to engage in, even when the innovation assumes teachers will work together to commonly define and work out problems pertaining to its use. Specific organizational supports for teacher collaboration may be required, which are, as Little (1987) states, "...like the practices themselves, neither subtle nor

mysterious" (p. 513). As was earlier mentioned in the review of literature chapter, included in Little's proposed "dimensions of support" are: 1) the public endorsement of "team efforts" and provision of opportunities for teachers to engage in "complex" and "compelling" tasks that require their combined effort; 2) the organization of the master timetable and staff assignments to allow teachers to work together on collaborative projects during school hours; and 3) the provision of adequate material and human resources to enable teachers to use any time allotted for collaboration, effectively and efficiently.

Considering the high school where this study was conducted in terms of Little's supportive conditions, a lack of planned support for more formal teacher collaboration around computer use becomes apparent. Endorsement of teacher collaboration, at both the school and district level, seems evident since release time for three resource teachers was provided, as well as computers and lab time intended mainly for ESL teachers and their students. The school timetable and certain staff assignments permitted a resource and content teacher to meet in the computer lab to work with ESL students, although regularly scheduled opportunities were not planned outside class time which might have enabled these teachers to more extensively discuss their work together. As well, there was not a specific forum established by resource and classroom teachers as a group, or in pairs, to address any perceived

lack of conceptual and procedural clarity inherent in the task that they engaged in; that is, using computers to promote academic language and content learning for ESL students. Thus, the absence of such supports for more formal teacher collaboration and the predominance of other structural constraints such as the organization of physical space and time in the larger school context, may have enabled norms of individualism and noninteraction, their classroom-centered focus, and adherence to a practicality ethic, to prevail.

The innovation's modification to fit school conditions should not be surprising. Even with teacher enthusiasm for the innovation, computer knowledge, and their understanding of Mohan's knowledge framework, this study illustrates how implementation may be constrained by the culture in which teachers work.

Implications

There are some implications for those involved both in planning and providing support for the implementation of an innovation assuming more formal or sustained collaboration among teachers. Those that the researcher considers important are as follows: 1) facilitate clarification of any assumptions regarding collaboration inherent in an innovation; 2) facilitate teachers' clarification of roles and expectations; 3) provide teachers with the opportunity

for regular scheduled meetings; 4) provide teachers with practical, concrete ideas, as well as time to discuss them and develop their own; and 5) guarantee the availability of additional professional support. Certainly aspects of these supportive conditions were in place at the school where this study was conducted. Nevertheless, the research findings serve as a reminder of the potential value these may have for those engaged in implementation. Each of these general suggestions is further explained in the discussion that follows.

1. **Facilitate clarification of any assumptions regarding collaboration inherent in an innovation.**

Any innovation that assumes teachers should collaborate for a specific purpose, can be explicitly stated and opportunity given for discussion of the forms collaboration could take. Through such discussion teachers should be able to establish working relationships with one another in the light of the innovation. Alternately, if teachers lack the opportunity to clarify the assumptions regarding collaboration and the reasons for this, the innovation will likely be modified to fit the larger school context.

2. Facilitate teachers' clarification of roles and expectations.

Inherent in any innovation that assumes some form of teacher collaboration are certain expectations regarding teachers' roles and subsequent responsibilities. By providing teachers with opportunities to clarify their understanding of what teachers' roles entail, collaboration that involves ongoing discussion and mutual planning may be found to be the preferred form for a particular innovation. Alternately, this form of collaboration may not be necessary. Yet without such discussion, teachers will likely continue to interact in ways that are consistent with cultural norms.

3. Provide teachers with the opportunity for regular scheduled meetings.

In order to counter time constraints on teachers and to help raise the status of teachers' work outside the classroom, teachers may need to be given regularly scheduled release time to discuss curricular and instructional matters. This would seem particularly useful when teachers are engaged in implementing an innovation that requires more extensive collaboration. Meetings held on a weekly basis, for example, may allow teachers to clarify in an ongoing manner their understanding of the innovation and to engage in joint

planning and evaluation of their progress. Furthermore, such meetings might encourage teachers to critically reflect on their activities and on the beliefs and expectations that underlie these. In contrast, monthly or quarterly meetings likely will not counter the influence of the larger school culture on attempts to collaborate more formally.

4.   **Provide teachers with numerous practical, concrete ideas as well as ample time to discuss them and develop their own.**

Linked to the seeming advantage of regularly scheduled opportunities for teachers to discuss their use of an innovation assuming sustained collaboration, may be the need to provide teachers with practical, concrete ideas that exemplify this. To ensure that these ideas help bring clarity regarding the innovation's use, teachers discuss the relevance of such ideas to their situation, further extend them if desired, and develop new ideas of their own. Through the provision of tangible teaching ideas and the opportunity for teachers to discuss and create materials themselves, it seems more likely that they may also explore various ways to adapt the innovation to suit their particular context.

5. Guarantee the availability of additional professional support.

Teachers engaged in implementing an innovation that assumes their collaboration may be further supported by other professionals, including consultants, project administrators, and teachers from other institutions. This support may take the form of assisting teachers to clarify the assumptions inherent in an innovation and to specify their roles and expectations in relation to these. Additionally, these professionals may provide practical ideas related to the innovation itself and to ways that collaborative efforts among teachers may be enhanced. The ready availability of such assistance may be particularly essential with those innovations that lack conceptual or procedural clarity. By working closely with other professionals who have background knowledge and prior experience related to an innovation, teachers may seek to clarify those aspects that might otherwise remain ambiguous. In the absence of such assistance, teachers may disregard one or more key features.

Directions for Further Research

Not only do this study's findings highlight implications for those engaged in planning and providing support for implementation of an innovation assuming teacher

collaboration. Additionally, they flag possible directions for further research. Eight suggestions are outlined here.

1. Interview those teachers who chose not to collaborate around the use of computers and attempt to determine why. Closer analysis of their comments may provide further understanding of those structural and cultural conditions of school life found to detract from, rather than promote, teacher collaboration.

2. Explore the influence of gender, ethnicity, age, and/or years of teaching experience on teacher collaboration. Of particular note regarding collaboration around computer use seems to be the consideration of gender as there was evidence in this study of varying degrees of computer interest and expertise among male and female teachers. Since collaboration is a relational issue, gender may also account for certain of the forms of teacher collaboration around computer use documented in this study.

3. Extend the findings related to issues of control within the larger school context, to include specific consideration of those who possess expertise that others lack. As "keepers of knowledge", these teachers may have an invested interest in limiting the amount of sharing that occurs since this ensures their ability to wield a certain degree of influence over those lacking similar expertise.

4. Conduct a case study of two "collaborative" pairs: one exemplifying an "expert-novice" relationship and the other, a relationship among "peers". In doing so, the findings documented in this study may be probed more extensively and an effort made to highlight other factors, such as gender, that either discourage or promote collaboration among teachers.

5. Compare and contrast the forms and patterns of teacher collaboration highlighted in this study with those that emerge among teachers involved in team teaching. Give particular consideration to similarities and differences between the two in terms of prevalent structural and cultural school conditions that lead to teacher isolation.

6. Examine teacher/administrator collaboration around computer use in a context of teacher isolation. Before proceeding, however, it would seem necessary to confirm that administrators had an interest in teachers' using computers for a specific purpose. This would then ensure administrator involvement in at least some form of collaboration with those teachers attempting to incorporate computers into their program. Documentation of their collaboration might offer additional insight on how an innovation is adapted to fit prevalent school conditions.

7. Assess the nature of student collaboration around computer use and seek to determine what structural and cultural features of school life may account for any recurring forms of collaboration. Consideration might also be given to the specific supports required if students are expected to engage in substantive collaboration pertaining to matters of language and content, as opposed to a focus on computer-related concerns.

8. Pursue a study of teacher collaboration around computer use focusing on the second and/or third years of the innovation's implementation. Since the innovation began as an exploratory notion, it can be expected to take two or more years to clearly establish what form it will ultimately assume in the site where used. Thus, a follow-up study one might explore whether or not teacher collaboration is different than was documented here. As well, any additional conditions supportive of teacher collaboration, or on the contrary, any that have been withdrawn, should be considered in terms of their influence on what happens to an innovation that assumes some form of teacher collaboration in a context of teacher isolation.

Concluding Remarks

This study explored what happened when an innovation that assumed teachers would coordinate their work around

computer use in some way, was implemented in a context of teacher isolation. The focus was not on individual teachers and their individual similarities and differences. Instead, this study focused on the structural and cultural conditions that typically prevail in a school environment, to account for the patterns of teacher collaboration found to occur. Even though teachers' may be generally unaware of these conditions and the effects on their activities, the adaptation of the innovation to accommodate the context in which it was used, provides evidence of a culture promoting teacher isolation, rather than collaboration. Until these structural and cultural conditions are altered, any expectation of sustained teacher collaboration involving ongoing discussion and mutual planning, seems unrealistic.

Certainly, no structural or cultural condition alone can be said to account for the forms and patterns of teacher collaboration found to emerge through on-site observation and teacher interviews. However, this study suggests that the combined influence of prevalent school conditions served to shape the forms of teacher collaboration that emerged around computer use with ESL students.

REFERENCES

Ball, S., & Lacey, C. (1984). Subject disciplines as the opportunity for group action: A measured critique of subject sub-cultures. In A. Hargreaves and P. Woods (Ed.), *Classrooms and staffrooms: The sociology of teaching* (pp. 149-170). England: Open University Press.

Benesch, S. (1988). Linking content and language teachers: Collaboration across the curriculum. In S. Benesch (Ed.), *Ending remediation: Linking ESL and content in higher education* (pp. 53-65). Washington, D.C.: TESOL Publications.

Brinton, D., Snow, M., & Wesche, M. (1989). *Content-based second language instruction*. New York: Newbury House.

Borg, W., & Gall, M. (1989). *Educational research: An introduction* (5th ed.). New York: Longman.

Bullough, R. (1987). Accommodation and tension: Teachers, teacher role, and the culture of teaching. In J. Smyth (Ed.), *Educating teachers: Changing the nature of pedagogical knowledges* (pp. 83-94). New York: Falmer Press.

Campbell, S. (1988). Richmond's learning services team: A response to educational change. *Research Forum*, 5, 25-27.

Crandall, D. (1983). The teacher's role in school improvement. *Educational Leadership*, 43 (3), 6-9.

Cuban, L. (1982). Persistent instruction: The high school classroom, 1900-1980. *Phi Delta Kappan*, 64 (2), 113-118.

Doyle, W., & Ponder, G. (1977). The ethic of practicality: Implications for curriculum development. In A. Molnar and J. Zahorik (Eds.), *Curriculum Theory* (pp. 74-80). Washington, D.C.: Association for Supervision and Curriculum Development.

Early, M. (1990a). ESL beginning literacy: A content-based approach. *TESL Canada Journal*, 7 (2), 82-93.

Early, M. (1990b). Enabling first and second language learners in the classroom. *Language Arts*, 67, 567-575.

Early, M. (1989). Using key visuals to aid ESL students' comprehension of content classroom texts. *Reading-Canada-Lecture*. 7 (4), 202-212/

Feiman-Nemser, S., & Floden, R. (1986). The cultures of teaching. In M. Wittrock (Ed.), *Handbook of research on teaching* (3rd ed.) (pp. 505-526). Washington, D.C.: American Educational Research Association.

Flinders, D. (1988). Teacher isolation and the new reform. *Journal of Curriculum and Supervision*, 4 (1), 17-29.

Fullan, M. (1982). *The meaning of educational change.* Toronto: OISE Press.

Fullan, M., and Pomfret, A. (1977). Research on curriculum and instruction implementation. *Review of Educational Research*, 47 (2), 335-397.

Goodlad, J. (1984). *A place called school.* New York: McGraw Hill.

Goodlad, J. (1983). A study of schooling: Some findings and hypotheses. *Phi Delta Kappan*, 64 (7), 465-470.

Goodlad, J. (1983). A study of schooling: Some implications for school improvement. *Phi Delta Kappan*, 64 (8), 552-558.

Hammersley, M., & Atkinson, P. (1983). *Ethnography: Principles in practice.* New York: Travistock.

Hargreaves, A. (1989). Curriculum policy and the culture of teaching. In G. Milburn, I. Goodson & R. Clark (Eds.), *Re-interpreting curriculum research: Images and arguments* (pp. 26-40). London, Ontario: Althouse Press.

Hargreaves, A. (1989). *Curriculum and assessment reform.* Milton Keynes: Open University Press.

Hargreaves, A. & Woods, P. (Eds.). (1984). *Classrooms and staffrooms: The sociology of teachers and teaching.* England: Open University Press.

Hargreaves, D. (1980). The occupational culture of teachers. In P. Woods (Ed.), *Teacher strategies: Explorations in the sociology of the school* (pp. 125-148). London, England: Croom Helm.

Higgins, J. & Johns, T. (1984). *Computers in Language Learning.* Reading, Massachusetts: Addison-Wesley.

Hord, S. (1986). A synthesis of research on organizational collaboration. *Educational Leadership*, 43 (5), 22-26.

House, E. (1981). Three perspectives on innovation: Technical, political and cultural. In R. Lehming & M. Kane (Eds.), *Improving schools: Using what we know* (pp. 17-41). Beverly Hills: Sage.

Huberman, A. & Miles, M. (1984a). *Innovation up close: A field study of twelve school settings.* Andover, Mass: The Network Inc.

Huberman, A. & Miles, M. (1984b). Rethinking the quest for school improvement: Some findings from the DESSI study. *Teachers College Record*, 86 (1), 34-54.

Jones, S. (1985). Depth Interviewing. In R. Walker (Ed.), *Applied Qualitative Research* (pp. 44-70). Aldershot, England: Gowen.

Lieberman, A. (Ed.). (1988). *Building a professional culture in schools.* New York: Teachers College Press.

Lieberman, A. (1986). Collaborative work. *Educational Leadership*, 43 (5), 4-8.

Lieberman, A. & Miller, L. (1986). School improvement: Themes and variations. In A. Lieberman (Ed.), *Rethinking school improvement: Research, craft, and concept* (pp. 96-111). New York: Teachers College Press.

Lieberman, A. & Miller, L. (1984). *Teachers, their world, and their work: Implications for school improvement.* Alexandria, Virginia: Association for Supervision and Curriculum Development.

Lincoln, Y. & Guba, E. (1985). *Naturalistic inquiry.* Beverly Hills, California: Sage.

Little, J. (1987). Teachers as colleagues. In V. Richardson-Koehler (Ed.), *Educators' handbook: A research perspective* (pp. 491-518). New York: Longman.

Little, J. (1982). Norms of collegiality and experimentation: Workplace conditions of school success. *American Educational Research Journal*, 19, 325-340.

Lortie, D. (1975). *Schoolteacher.* Chicago: University of Chicago Press.

McLaughlin, M. & Marsh, D. (1978). Staff development and school change. *Teachers College Record*, 80 (1), 69-94.

Mishler, E. (1986). *Research interviewing: Context and narrative.* Cambridge: Harvard University Press.

Mohan, B. (1989). Knowledge structures and academic discourse. *Word*, 40 (1), 99-115.

Mohan, B. (1986). *Language and content*. Reading, Massachusetts: Addison-Wesley.

Oakes, J., Hare, S., & Sirotnik, K. (1985). *Collaborative inquiry: A congenial paradigm in a cantankerous world.* Chicago, Illinois: Annual Meeting of the American Educational Research Association. (ERIC Document Reproduction Service No. ED 261 073)

Rossman, G., Corbett, H., & Firestone, W. (1988). *Change and effectiveness in schools: A cultural perspective.* Albany: State University of New York.

Sarason, S. (1982, 1971). *The Culture of the School and the Problem of Change.* Boston: Allyn and Bacon.

Sarason, S., Pascareli, J. & Cohen, L. (1985). *Fulfilling the promise: A fresh look at collaboration and resource sharing in education.* (ERIC Document Reproduction Service No. ED 265 159)

Scott, J. & Smith, S. (1987). *From isolation to collaboration: Improving the working environment of teaching.* Elmhurst, Illinois: North Central Regional Educational Office. (ERIC Document Reproduction Service No. ED 287 215)

Snow, M., Met, M., & Genesee, F. (1989). A conceptual framework for the integration of language and content in second/foreign language instruction. *TESOL Quarterly*, 23 (2), 201-218.

Spradley, J. (1980). *Participant observation.* New York: Holt, Rinehart and Winston.

Spradley, J. (1979). *The ethnographic interview.* New York: Holt, Rinehart and Winston.

Tye, K. & Tye, B. (1984). Teacher isolation and school reform. *Phi Delta Kappan*, 65 (5), pp. 319-22.

Van Maanen, J. (1988). *Tales of the field: On writing ethnography.* Chicago: The University of Chicago Press.

Watson-Gegeo, K. (1988). Ethnography in ESL: Defining the essentials. *TESOL Quarterly*, 22 (4), 575-592.

Werner, W. (1988). *Understanding School Programs* (first draft). Vancouver: University of British Columbia, Center for the Study of Curriculum and Instruction.

Werner, W. & Case, R. (1988). *Factors Affecting Implementation of Issues-Related Innovations* (EDGE, Occasional Paper #15). Vancouver: University of British Columbia, Research and Development in Global Studies.

Wideen, M. (1989). Collaboration: New fad or new possibility? *Research Forum*, 5, 4-7.

Woods, P. (1986). *Inside schools: Ethnography in educational research*. London: Routledge and Kegan Paul.

Wyatt, D. (1984). *Computers and ESL*. Washington, DC: ERIC Clearinghouse on Languages and Linguistics. (ERIC Document Reproduction Service No. ED 246 694)

Zahorik, J. (1987). Teachers' collegial interaction: An exploratory study. *The Elementary School Journal*, 87 (4), 385-396.