TEACHER DISCOURSE IN COLLABORATIVE ACTION RESEARCH:

A CASE STUDY OF PROFESSIONAL AND CURRICULUM DEVELOPMENT

by

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ABSTRACT

The directive for "action" to sustain the quality of human life parallels "action research" in education to improve the quality of learning experiences in schools. The purpose of the study was to provide insight and understanding into the features of a team of intermediate teachers interacting in the development of a school-based curriculum project, the Winter Studies Program, in support of environmental education.

The case study is an analysis of teacher discourse. It had the aims of: one, illuminating the dynamic features of dialogue that characterized teacher interactions and the processes of change in curriculum development; two, examining the support system and organizational structures that enabled change; and three, reflecting on collaborative action research as a process for professional development. Within a framework of systematic inquiry, data collection included video and audio recordings of teacher team meetings, fieldnotes, and reflection journals.

The findings suggest that teacher discourse is characterized by three dynamic features: commonality of understanding of praxis, narratives of experience, and tension. In the establishment of a Professional Support Group teachers interact collaboratively to develop curriculum and in so doing, develop professionally. A support system, inclusive of organizational structures, creates opportunities for change. The study concludes that action research empowers individuals, through reflective inquiry, to change their praxis or the structures that influence their praxis.

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ACKNOWLEDGEMENTS

For my daughters, Marcie and Elysa

"That is all very well, little Alice...but there is a
third thing you must do...You must do something to make
the world more beautiful," said her grandfather.

[excerpt from Miss Rumphius by Barbara Cooney]

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Chapter One

EMERGENCE OF THE STUDY

It is teachers who will, in the end, change
the world of the classroom by understanding it.
(Lawrence Stenhouse)

Introduction

Our world is undergoing tremendous change as society shifts from an industrial orientation to an information society which necessitates the decentralization of power, interdisciplinary networking for global issue problem solving, focus on the individual as central to the evolution of organizational structures, and long term planning for sustenance that prescribes multiple option decision-making (Provincial Intermediate Teachers' Association, 1990). Adjust this global lens to the educational context and the current initiatives in the "restructuring of schools" reflect this shift: cooperative learning, collegial collaboration, reflective practitioner as curriculum developer and action researcher. **How** we respond to these changes is crucial for it will construct the quality of life which we will experience, both within our community and school environment.

> The question is not whether change will occur or not. It is not whether change is good or bad. Instead the question is how do we deal with change (Provincial Intermediate Teachers' Association, 1990, p.28).

Background

As an industrialized nation we have operationalized the

Western World View, assuming the world to be vast with unlimited resources and opportunities for humans, that for every problem there exists a solution, and "having" gives form to "being". However, the necessity for change in viewing society's interrelationship with its natural environment has become publicly apparent since the post World War II production surge.

> ...a common and increasing concern for the quality
> of human life...is a fundamental characteristic
> of environmental consciousness, and is probably the
> most powerful motivating force underlying the current
> initiatives of individual and collective action on
> matters of environmental impact (Linke,1979,p.18).

While Roultley (1983,p.283) attests to paradigm shifts that characterize change in environmental and political values, "too often, changes in attitudes (as expressed) are not accompanied by corresponding changes in practices": It is the organizational structure within the prevailing paradigm that dictates whether or not change in practice will occur. In order to actualize change in behaviour and practice, as one route to "changing beliefs and attitudes", there must be action: "Philosophy, though relevant, is not enough" (Routley,1983,p.287).

No less could be said about the current imperative within schools to restructure. We can no longer ignore the discrepancy between our "theory for action" and "theory in use". One might say that as we are BEcomING metacognitive of our world's fragile balance and the threatened quality of human life with a drive for "action on reflection", so too we are contemplating the quality of education and learning for all members within an ongoing changing

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community environment. With opportunities for change publicly apparent through the Provincial Year 2000 Documentation, the imperative for our paradigm shift is one of personal responsibility for self-actualization, both at personal and professional levels, and collaboration for living in partnership with members of our environment, both within the local and global contexts. For some educators, this "challenge of change" will be openly embraced with personal energy and creativity; for others it represents untravelled territory where entrenched behaviours and practice may **initially** place them "at a loss".

The Purpose of the Study

Routley's (1983) directive for "action" for sustaining the quality of human life parallels "action research" in education for improving the quality of learning experiences in schools. He suggests that the examination of the organizational structures and practices embodied in a paradigm are relevant to the question, "How can change be achieved?" It is one avenue to illuminating how social conditions are manifested, how policy could be altered, and perhaps, how the structures themselves could undergo change. Likewise, observation of the organizational structures and teaching practices within a school may lead to insights on how teachers perceive, and respond to, change. Action research provides a framework within which to monitor the processes of both individual and institutional development (Posch,1991).

The purpose of this study was to provide insight and

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understanding into the dynamic features of a team of intermediate teachers interacting in the design, implementation, and evaluation of a school-based curriculum project in support of environmental education. As the study unfolded, it became apparent that this was also an opportunity for teachers to critically reflect on educational issues, pedagogical propositions, and personal perceptions of "schooling". For the school and its community, this study represented a process for innovation: in the way the school was organized; in the planning and design of curriculum objectives, content, delivery, and assessment; and in establishing a "partnership" of community learners. In the words of the school administrator, it reflected "on the leading edge of educational practice".

From the researcher's perspective, the study provided an open window to observe and participate in collegial collaboration for curriculum development, but more significant, to utilize the "action research" model as a process: to come to some understanding of the nature of teacher interactions in a context of collaborative curriculum development; to observe and describe changes in organizational structures that affected teacher behaviour and practice, attitudes and beliefs; to apply the principles of environmental education to viewing personal and professional development - viewing teachers' level of consciousness of change (state of metacognition), meaningful experiences that motivated them to change, and the personal dynamic qualities within the context that enabled change. While

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this approach emplifies the "utilitarian" value attached to action research it cannot ignore the underlying ethical importance for this researcher in reflecting on the evidence gathered about one's own practices and beliefs experienced in facilitating this study.

Introduction to the Design of the Study

> The heart and soul of school improvement
> and change occur through the interactions of
> teachers ... (Chrispeels,1992,p.xii).

Background

In the early Summer of 1992 the researcher received a grant to implement a district curriculum development project centered on teacher collaboration for performance assessment of children's investigations in science. Unfortunately, the interest from teachers in the school district to participate in such a project was minimal. The researcher was aware that at the present school of assignment, the grade six and seven intermediate team of teachers was going to reorganize their teaching practice to facilitate multiage grouping through team-teaching and interdisciplinary learning experiences for students. Each team member was approached informally to determine the degree of consensus for participation in a science performance assessment project.

After a brief meeting in the Fall of 1992 with the team planning a year outline for the coordination of activities, it became apparent that the vision of one member on the team to inititate a "Winter Studies Program" necessitated funds for team

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planning within school time due to the varied after-school commitments of teachers. At this time, the researcher shifted agendas to support the currriculum development initiative through a framework of action research. From this point on the researcher assumed the role of facilitator in the organization of time, dispersal of funds, and proposing the parameters and topics for each meeting. The initial meeting that launched the action research process was dated January 21, 1993. What evolved was an action research agenda for meeting the needs of both: the teachers in program development and the researcher's data collection. The researcher took responsibility for accountability by writing the project report to the district and applied for additional district funds to allocate to the extension of the program. Involvement in the Winter Studies Project lasted six months, from January to June in 1993, and involved six team meetings. Two follow-up meetings for teacher feedback (member checks) took place in September 1993 and June 1994.

The Significance of the Study

This study provided an opportunity for teachers to engage in "interactive dialogue about issues of interest and concern to the participants and about alternative proposals for action aimed at program improvement" (Robottom & Hart,1993,p.60). It is a study that evolved to illuminate the significant features about the interactions of a team of intermediate teachers in collaborative action research that were integral to the process of change, and

the support systems that became crucial for curriculum in change. The rhetoric of this statement is deliberate: *about* teacher interactions signifies an inquiry for the construction of knowledge and understanding; *in* action research specifies particular characteristics of the context and of a systematic process of critical inquiry; *for* curriculum in change denotes action to enhance development in three dimensions - within the school, among teachers, and within one self. Without significant changes in the organizational structures and processes within each dimension, change would not be possible (Routley 1983; Robottom 1987; Chrispeels 1992).

To improve one's educational practice requires teachers to engage in understanding their own practice. Practice, in everyday conversation, refers to habitual or "customary" action; whereas praxis is "informed committed action" as a result of personal knowledge - "a rational understanding of practice (that) can only be gained through systematic reflection on action" by the practitioner (Kemmis & Carr,1986,p.189). Further, personal knowledge can develop through "rational discourse between action researchers and other people with whom they interact"(p.190). Through collaborative self-reflective inquiry into their practice, action researchers "can identify and explore the contradictions of their own practices, understandings and situations" (p.194).

Research Question One

1. What features of teacher discourse characterize teacher interactions with colleagues and the curriculum content?

This query, in the analysis of teacher discourse, can be guided by three, more specific questions:

a. What are the dynamic features of teacher discourse in collaborative action research which illuminate teacher praxis?

b. How did the teachers develop a program of Winter Studies?

c. What principles of Environmental Education for curriculum development emerged?

The "emancipatory" quality of action research for educational change assumes that institutions can be molded or changed:

> ...they are created and recreated by practices which sustain them and they are reproduced or transformed either by maintaining or transforming the practices which constitute them (Kemmis & Carr,1986,p.195).

Essentially, a change in practice by those who "constitute" it leads to change in the structures. But acknowledgement of elements that shape institutions is needed: Social pressures, policies and practices may be outside of the control of the practitioner and therefore, it is not sufficient just to change one's practice; one may need to confront the "constraints" on action". As interactive and participatory research, it is a social process that "requires understanding the perspectives of others involved in and affected by the action" (p.199).

Research Question Two

2. What support, both individual and institutional, facilitated professional and curriculum development in action research?

Not all action research studies embody the qualities of action research as presented: Some fail to employ a systematic line of inquiry by neglecting to use the spiral of self-reflection; others are not participatory or collaborative. "Different kinds of 'facilitator' roles establish different kinds of action research" (Kemmis & Carr,1986,p.202). Technical action research is facilitator-directed; that is, given questions direct the inquiry that is used to enhance external research rather than develop praxis. In practical action research, the facilitator joins the group process as a cooperative member to assist in the process of plan, monitor, and reflect. It may function as a "stepping-stone" to "emancipatory" action research.

> In emancipatory action research, educational development
> is understood as a joint enterprise which expresses a
> joint commitment to the development of educational
> practices as forms of interaction which, taken together,
> form the fabric of social and educational relationship
> ...(Kemmis & Carr,1986,p.204).

For those who willingly participate in collaborative action research, it is an "empowering" process for striving for a more democratic and "fulfilling form" of education. It enables participants to change through self-critical reflection "at the rate at which it is justified by reflection and feasible for

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the participants in the process" (p.205).

A socially critical orientation to action research challenges the social and political frameworks underlying educational policy and "enables teachers to exercise the right to question the authority of past experience" (Rudduck,1992,p.165).

Research Question Three

3. In what ways did this study embody collaborative action research?

This study provided the opportunity, through organizational restructuring, to engage a team of teachers in interactive discourse for the purpose of developing curriculum. As the study unfolded, its "shape shifted" to a forum in which all participants critically reflected on educational issues, pedagogical propositions, and personal perceptions of "schooling".

An Overview of the Study

This study is presented in seven chapters. Chapter One has presented the background and purpose for the study and introduced its significance in light of three research questions. Chapter Two highlights the relevant theoretical perspectives or "theories for action" that provide a foundation for this study.
Chapter Three describes in detail the research design, including the methods of analysis and data trustworthiness, and challenges to the study. Chapter Four focuses on the features of teacher discourse that illuminated the context of collaborative

action research and the "emerging" curriculum. Chapter Five
presents "a community of support" to teachers in collaborative
action research and propose the organizational structures that
created opportunities for change. Chapter Six represents a
reflection on the study, an illumination of collaboration in
curriculum development and the retrospection-prospection dialectic
of action research that enabled change. In the final chapter, a
discussion of the findings precedes the conclusions for
professional and curriculum development within collaborative
action research. Limitations of the study are followed by
implications for further study.

Chapter Two

THEORETICAL PERSPECTIVES THAT FRAME THE STUDY

> I start with the assumption that the improvement
> of education will result...from enabling teachers
> and others engaged in education to improve their
> ability to see and think about what they do
> (Eisner,1985,p.104).

Introduction

This study encompasses six areas of literature research. Each represents a different, yet complementary, lens from which to view change within a school setting. It is in consideration of the overlap among all viewpoints that the potential for individual and institutional change within education can be fully appreciated. A preface of "educational research" will lead into a review of the literature concerned with change: critical social science as a paradigm for change, action research as a methodological process for change, environmental education as a curriculum for change, school improvement as a theory about change, advisory or support groups as concepts for change, and reflective inquiry as a practice for change.

Educational   Research

Educators engaged in the practice of teaching are assumed to "already possess some 'theory of education' which structures their activities and guides their decisions"(Kemmis & Carr,1986,p.113). This "theory" can be thought of as the practitioner's "working" theory. Therefore, when the research literature speaks of a *theory-*

praxis gap, they are referring to a situation in which

practitioners do not evaluate and interpret the researched theory

with the "criteria" presented to them.

> A theoretical activity explicitly concerned to
> influence educational practice can only do so
> by influencing the theoretical framework in
> terms of which these practices are made
> intelligible (Kemmis & Carr,1986,p.115).

The theoretical frameworks guiding teacher praxis embody concepts,

beliefs, values and assumptions. In order for these to be

improved, a "more critical, scientific attitude", is needed to

"expose and eliminate the inadequacies of the beliefs and values

that are implicit in educational practice" (Kemmis & Carr,1986,

p.123).

> ...the purpose of educational research is to ensure
> that the observations, interpretations and judgments
> of educational practitioners can become more
> coherent and rational and thereby acquire a greater
> degree of scientific objectivity (p.124).

If educational research is to address "educational problems", then

it necessarily needs to be based in the practical experiences from

which they arise: It is "the concrete practical experiences of

teachers (that) provide both the subject matter for theoretical

enquiry and the testing ground on which the results of this

enquiry must be based" (Kemmis & Carr,1986,p.126). It follows that

"the active participation of practitioners in the research

enterprise is an indispensible necessity".

Critical   Social   Science: A Paradigm For Change

A view of educational research that is directed at

"educational change" is rooted in critical social science. Whereas

the positivist perspective aims to explain, and the interpretivist
to understand, " a critical educational science has the aim of
transforming education" (Kemmis & Carr,1986,p.156). In light of
educational reform it necessitates collaborative participation by
educators, in education, *for* educational change.

> ....a view emerges of a critical educational science
> which aims at involving teachers, students, parents
> and school administrators in the tasks of critical
> analysis of their own situations with a view to
> transforming them in ways which will improve
> these situations as *educational* situations for
> students, teachers and society (Kemmis & Carr,1986,
> p.157).

This paradigm has three distinct characteristics (Kemmis & Carr,
1986,p.146):

1.It is human "in the sense that it involves active knowing
by those involved in the practice" through communication and
interaction;

2. It is social through its "dynamic" process of
"enlightenment" through which understanding emerges from
self-reflective discussion;

3. It is political in its organization for action through
rational decision-making.

Its application to this study is appropriate: Assuming a
critical educational stance implies that the researcher will
support schools in developing a self-reflective perspective by
becoming a participant in the process itself; and, for the school,
it means envisioning participation for the purpose of changing
education and its institutions in some way. Should the research

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lack "practical commitment" for change, it subsumes to a "species of interpretive research". Therefore, actualization of this theory rests on the practitioners' willingness to transform thought and praxis, and in effect, change the educational process itself.

> Clearly, a critical educational science requires
> that teachers become researchers into their
> own practices, understandings and situations
> (Kemmis & Carr,1986,p.162).

Action Research: A Process for Change

> Action research defies easy description.
> (Jung & McCutcheon,1990,p.144)

Action research can be viewed from a number of different lenses, all in agreement that it is "practitioner oriented". Hopkins (1987) makes a clear distinction between teacher research and action research, the latter ["despite popular misconception" (p.124)] being initiated by outside researchers "for the benefit of insiders and the wider academic community". On the other hand, teacher research is "a practitioner initiated mode of enquiry". One might argue that the perspective of "emancipatory action research" by Kemmis (1987) is indeed teacher research, for it is only the practitioners who can change "their practice", thereby changing the situations in which they work,

> Action research therefore cannot be other than
> into one's own practice (Kemmis & Carr,1986,p.191).

Perhaps a more generic definition of action research is that stated by Winter (1989,p.3):"the study of a social situation, with a view to improving the quality of action within it". It aims to establish an interdependency between theory and praxis in such a

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way that the process improves praxis and develops better theories to guide it (Elliott, 1991). Self-evaluation and professional development are implicit components of the process, or as Winter (1989,p.10) reframes, reflection (meaning the development of understanding) and changes in praxis. It is "intrinsically educational"(Winter,1989,p.4) by the nature of its cyclical format that embodies a "dialectical" relationship between "action and reflection":

> "a form of self-reflective enquiry undertaken by participants in social situations in order to improve the rationality and justice of their own practices, their understanding of these practices, and the situations in which the practices are carried out"(Kemmis & Carr,1986,p.162).

This concept of a "dialectical view of rationality" establishes a relationship that characterizes opposition and mutual exclusivity. It is inherrent in the *theory*-praxis gap, or what Robottom (1987) refers to as the "rhetoric-reality gap", in which the "language" of the researchers and teacher praxis do not match. It is evident throughout the action research process in which the "individual" participates in a collaborative "social group" process of self-reflection - retrospection (observation) on the action being taken (act) leading to prospection (reflection) for future action (planning). This dialectical quality creates a "tension" throughout action research that can provide the momentum for teachers to transform their individual practice and activate change in societal institutions.

Kurt Lewin was the first researcher to formulate "self-

reflective enquiry" as a "spiral of cycles of planning, acting,
observing, and reflecting". He emphasized its qualities:
participatory, *democratic*, and *contributory to change* .
Although not all current action research utilizes this systematic
inquiry of methodology, the aims continue to reflect the
transformative nature of this research: They are to improve (in
praxis, in the understanding of that praxis, in the situation in
which the praxis takes place) and to involve (the participants
at all phases of the process).

> The self-reflective spiral links reconstruction of the
> past with construction of a concrete and immediate
> future through action. And it links the discourse of
> those involved in the action with their practice in the
> social context (Kemmis & Carr,1986,p.187).

McTaggart & Kemmis (1982,p.13) emphasize interactive
discourse as "essential" for reflection in that it provides "a
variety of perspectives on the effects of action and the
constraints experienced". Further, it illuminates teachers'
personal theories of action, leads to "an examination of more
formal epistomologies", strengthens skills of critical thinking
and collaboration, and provides opportunities for support through
networking (Jung & McCutcheon,1990,p.149). One need only look at
the broad range of case reports in the literature to substantiate
the claim that action research has been a viable process for
understanding and implementing change in teaching practice and
curriculum development since the early 1970s [Humanities
Curriculum Project, Ford Teaching Project, The Class Action
Research Network](Winter,1989; Hopkins,1985; Hopkins,1987).

Action research is about the development of the
curriculum in schools and, as a result,
improving schools (Evans,1991,p.13).

Environmental Education: A Curriculum for Change

An emerging new paradigm for education reflects a transformed
ideology for improving the quality of learning in schools: from
mass to personalized teaching, single to multiple constructs of
learning, passive to active participation, isolated to
interrelated content, rigid to flexible timetabling (Therrien,
1984). Its "socially critical orientation" toward curriculum
development supports action research as "participatory research"
in which the methodology emerges through the process of social
interaction (Robottom & Hart,1993,p.55). In the field of
environmental education this approach assumes that: an
"interdisciplinary inquiry" is necessary for "an understanding
of the complex relationships between human beings and their
environment"; and, the learning process needs to "foster" the
"dynamic" qualities in individuals for "action" in the resolution
of local environmental problems (Elliott,1991b,p.29).

Research in the development of curriculum for Environmental
Education necessitates a variety of lenses from which to consider
its "interdisciplinary nature". Routley (1983) alludes to a
lineage of competing paradigms and paradigm shifts as early as
fourth-century B.C. during the "turbullent intellectual times" in
Greek culture. The Positivist Paradigm, or "Dominant World View",
has long prefigured curriculum and teacher professional
development: curriculum goals are "expert-derived givens";

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knowledge is subject-based and outcome-driven; teachers are
disseminators of knowledge, necessitating the control of
environment and learner behaviour; learners are passive recipients
of "content"; evaluation of learning through quantitative methods
reinforces teacher authority for teacher accountability.

Historically, environmental education was founded as "nature
study" and "conservation education", subject-derived orientations
to the study *about* the environment. It wasn't until the late
1960s, in response to "warnings of imminent ecological disasters"
(Stevenson,1987,p.70) that environmental education began to be
conceived in broader terms - having social, economic, historic,
and political interactions. Greenall Gough (1993,p.6) quotes John
Young:

> The impending global catastrophe was seen at first
> as the simple result of technological excess, of
> *man's* inability to control the monster he had
> created.

With the publication of such works as <u>Silent Spring</u> (Rachel
Carson), <u>The Population Bomb</u> (Paul Ehrlich), and "Blueprint for
Survival" (Edward Goldsmith) by a few concerned "crusading
scientists", and the achievement of space exploration confirming
the earth's finiteness, the delicate interrelationship between
population, resources and environment was raised to "community
consciousness" (Robottom,1987,p.86).

The year 1972 signifies the initial recognition of the United
Nations to respond to the world-wide concern for "quality of
life"; it was at a time when an attitude shift in the organization

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of society was prominent - an era of "reaction against" the economic, social, and political structures. With international involvement of the United Nations [Belgrade Chapter 1977, Tbilisi Declaration 1978],"guiding principles and key characteristics of environmental education" were outlined to actualize goals that emphasized the prevention and resolution of environmental problems through the development of:

> critical thinkers, social inquirers and problem
> solvers...active participants in environmental
> political decision-making (Stevenson,1987,p.73).

Arising from the Stockholm Conference of 1972 has been the development of an international program in environmental education, the UNESCO program, and concerted effort world-wide for "sustainable development" ("development that is not using up the wealth of the past, and living at the cost of the future") (OECD, 1991,p.11).

The OECD (Organization for Economic Cooperation and Development) Centre for Educational Research and Innovation (CERI) has taken a stand in defining "environmental education" as "one of the most important priorities for the future development of education". In 1986 the Environment and School Initiatives project was developed around three guiding principles: 1. the development of "environmental consciousness" as having dual value (utilitarian and ethical); 2. the provision for "meaningful experiences" that motivate learning and enable action; 3. the promotion of "dynamic qualities" such as independence, commitment, initiative, and responsibility in order to prepare young people to

cope with "large-scale social changes".

> Schools must provide frameworks for young people
> to develop initiatives and self-reliance and to
> monitor themselves on the basis of reflected values
> (OECD,1991,p.12).

Implementation of the project required participating schools and teachers to commit to two goals: the first, to frame the principles of the project into their specific context; and second, to participate in action research as defined by Posch (1991,p.15) as "to reflect (systematically) on their activities in order to improve them and contribute to their own and others' knowledge". So it was in the beginning stages of the Education and School Initiatives project: Teachers readily accepted "the principles" into their own specific context; but the actualization of them was far more difficult given the organizational constraints of limited support, training, and time. Today the project advocates the development of networking systems, support structures, and action research by teachers for the creation of "dynamic learning" environments.

In order to implement curriculum reform that is active, inquiry-based, interdisciplinary, and socially critical, teacher pedagogy must be in accord with a philosophical framework that embodies these principles. The underlying assumptions of such an ideology of "education *for* the environment" are: learning is a dynamic process during which conceptual meaning is socially reconstructed through interaction with the environment [broader term]; and, the transformation of conditions emerges as

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understanding of social contradictions become apparent (Robottom & Hart,1993). However, if teachers approach "schooling" as the transmission of "dominant beliefs, values and norms" [a view that may have been indoctrinated by their previous teacher training, research experiences, personality (Marcinkowski,1990,p.25)] then the state of curriculum for environmental education is focused on learning *about* the environment. Curriculum becomes classroom-focused, subject content-based, teacher-directed, technical, and "mastery for assessment". This conventional teacher practice is "antipathetic to the learning autonomy and responsilibity sought in education *for* the environment"; it reinforces the technocratic concept of environmental problem resolution [teachers as "disseminators of knowledge" in the utilization of researcher expert-derived curriculum materials (Robottom,1987,p.92)]. The prevalent social and political conditions resist "authentic educational reform".

These two very different paradigms that structure the way in which curriculum for environmental education is developed present a dichotomy: Positivism promotes individualistic action, acceptance of expert-derived curriculum and materials, and environmental control with little impact for long term change; Critical Social Science advocates collaborative action, critical reflection on praxis, and networking of active inquiry for understanding the interactive social/economic/political conditions leading to significant impact for change in social and political structures.

Not all practical problems necessitate an
action-research approach (Elliott,1992,p.31).

Sometimes, questions are posed for "understanding" the
actions and meanings arising from human interaction within its
environment. Interpretive understanding of human actions is
justification for educational inquiry. Within the classroom
context the teacher dialogues with students in order to understand
the meanings that learners attach to their environment. The
teacher is the organizer of "authentic" learning experiences -
learning through interaction with the environment translating into
education *in* the environment. There is no transformation of the
"real world", only a reinterpretation of "social reality"
(Robottom & Hart,1993).

To assume a critical perspective in education *for* the
environment necessitates shifts from convention to emancipation -
the role of teacher from "authority-in-knowledge" to collaborative
participant (critical inquirer), the role of student from passive
recipient to "active generator" of new knowledge, the source of
knowledge from pre-determined texts of a singular discipline to
"emergent reports" compiled from inquiry within a variety of
contexts (Robottom & Hart,1993,p.26). This is no easy task as
recorded by Elliott (1991a), Stevenson (1987), and Robottom
(1987). While the theory supports flexible, interdisciplinary
teaching praxis that facilitates student-centered problem solving,
the organizational structures of schools reinforce pedagogy of
convention: "How can teachers change or improve their praxis when
pedagogy is constrained by organizational conditions such as

timetable scheduling and classroom control, and restricted by

assessment for knowledge and skill acquisition?" (Stevenson,1987,

p.76). While the dilemma of the "rhetoric-reality gap" creates

dissonance and tension for teachers, Robottom (1987) proposes that

teacher acknowledgement of the "discrepancy between theory and

practice" through "educational theorizing" raises environmental

education to an "emancipatory" level where critical self-

reflection generates the potential for improvement in praxis:

> ...there is scope for development if there are
> discrepancies between personal theory and
> professional practice, or between these and the
> physical or social structures and social
> relationships of the setting (Robottom,1987,p.107).

"Understanding of the interactions" within the context that

constrain and shape praxis enable teachers to restructure their

actions. Therefore, through a model of action research, teachers

are able to:

> participate more actively in critique and action
> aimed at transforming their working structures
> and relationships in a manner consistent with
> the aspirations of environmental education
> (Robottom,1992,p.141).

Further, the organizational structure of action research that

necessitates voluntary participation, collaboration, critical

social inquiry, and critical self-reflection, enables teachers to

model this process with students. Together, teachers and students

can become engaged in critical thinking, active social inquiry,

problemsolving, and collaboration for action within the

interdisciplinary context of a "community" of social, economic,

and political issues that directly affect the environment.

...students undertake action-research into how
to improve the quality of their environment...
teachers undertake action-research into how to
pedagogically improve the quality of students'
curricular experiences...[researchers as
internal participants] facilitate teachers'
action research...(Elliott,1992,p.30)

Action research is a process for change, not only *for* the

environment through curriculum development; but, for teachers and

researchers to develop both professionally and personally through

self-reflection that creates the potential for individual and

institutional transformation.

School Improvement: A Theory About Change

Schools and those involved with them change very
slowly (Norman & Gibbons,1987,p.103).

Efforts to improve schools are "typically whole school

initiatives...concerned with organizational and curriculum issues

(that)...involve the whole staff, encourage reflection and problem

solving" (Hopkins,1987,p.120). School improvement, as a defineable

term, "refers to a set of strategies that aims to strengthen the

internal organization of the school in an effort to make it more

responsive to external pressures and more able to manage its own

future". The Policy Directions of 1989 is one example of the

external pressures being placed on the "entire educational system"

in British Columbia, affecting the economic, political, and

social structures within schools today (Platt 1991).

...schools can no more change without the informed
commitment of teachers than teachers can change
without the informed commitment of the
institutions in which they work (Kemmis,1987,p.74).

If school improvement is to be actualized, it can no longer

assume that the "large scale implementation" of curricular

platforms through mass teacher inservice programs will be

effective, as supposed in the early 1960s. Current research

assumes the teacher "at the centre of any improvement effort" and

envisions "collaboration, collegiality, and mutual adaptation as

necessary ingredients in any school improvement plan" (Wideen,

1987,p.5). Thus school reform is grounded in a perspective

of "staff development" for "teacher professional development".

Through the effective schools research a vast "knowledge base" has

created an increased range of options for school reform - "a rich

legacy of improved teaching methods and better conceptualized

structures of the content areas". Further, acquired understanding

of the complex social structures and information systems in

education today negate any effective impact in school reform by

teachers working in isolation from colleagues; collaborative

problemsolving efforts for the improvement of teaching practice

need to become part of the life of the school. Finally, in the

ever-growing, information-processing era that exists, to respond

to the "continuing nature of change that is occurring in society"

there is the need for "continued professional growth among

teachers" - "self-renewal" (Wideen,1987,p.13).

There are a number of controversial issues on the subject of

school-based staff development. "What is the purpose for staff

development?" One perspective regards staff development as teacher

training "in skills that would result in improved student

performance". The work of Joyce & Showers (1981), Vaughan (1983),

and Sparks (1984) elaborate on such programs and strategies for the improvement of teacher praxis. Another point of view advocated by Dillon-Peterson (1981) and Stenhouse (1984) encourages "continuous personal and professional growth of teachers within a respectful, supportive and positive climate" (Wideen,1987). Of contention is the issue of limited resources during economic cutbacks: "To what extent are teachers responsible for "making up for a loss of resources" at the expense of burnout?" In acknowledgement of the complex process of school improvement, "Why is it that staff development expectations focus on the 'quick-fix' schemes in 'ready-made packages'?". Staff development takes time.

One way of thinking about institutional change is to operationalize the "open-systems" theory: that is, likening school to a "living organism that exists in, influences, and is influenced by, its environment" (Chrispeels,1992,p.2). The concept of schools as "complex social organizations with numerous internal and external interactions and processes" is integral to this theory. It provides the researcher with a wide-angle lens to explore the interactive relationship between the school and its environment through four dimensions: school culture, leadership, curriculum and practice, and organizational structures and processes. Chrispeels'(1992,p.21) case studies of eight schools participating in school restructuring attests to the "difficulty, complexity, and fragility" in the nature of the processes of change. What appears to have the greatest impact on school culture and curriculum and praxis is the organizational structures that

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foster "collaboration, cooperation and shared decision-making":
Such processes of interaction empower teachers to enhance their
praxis and commit to "mutual responsiblity".

Embedded in these structures is the concept of change as both
cultural and political: change in norms, attitudes and beliefs for
professional collegiality necessitates "a political strategy that
builds coalitions of support" through leadership involving
teamwork (Chrispeels,1992,p.16). Inherrent in the construction of
professional collegiality is facilitation of communication among
teachers.

> Improvement requires openness and time for
> discussion with colleagues...we need to pull
> together, talk with each other constantly, talk
> about ideas, observe others and team together. The
> principal has a important role in communication
> through an open-door policy and by building an
> awareness among staff through discussion of issues,
> being open and flexible to talk about issues...
> (Chrispeels,1992,p.151).

Griffin (1987) discusses six variables in the social
organization of the school that are determinants of the success of
staff development programs and strategies: leadership, school
climate or organizational ethos, teacher population, student
population, the features of professional interactions, and home
-school relations.

The role of the principal in school research and in
instructional leadership is now emerging as more crucial for
school change than the training for management and administration.
Rosenholtz (1985) illuminates the principal as "the key person who
promotes, maintains and monitors" the processes of shared

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decision-making, goal-setting, and evaluation - the "norms of collaboration" (Griffin,1987,p.32). Such skills as those presented in Sergiovanni's "five leadership forces that build good skills" foster staff development: technical skills as in delegating and scheduling, human skills as in listening and managing conflict, educational skills as in knowing current learning theory and strategies, symbolic skills as in representing and articulating school values, and cultural skills as in rewarding collegiality and experimentation and demonstrating high expectations, trust, and confidence (Sapier & King,1985).

Professional interactions among teachers can be likened to "networks for educational change" (McLaughlin & Lieberman,1992, p.63):

> Networks provide colleagueship and professional
> growth through varied activities...that engage
> and sustain teachers' interest and commitment,
> blend personal and professional, social and
> work-related activities...in establishing a
> climate of trust and support.

Features of such interactions include: "a discourse community that encourages exchange among members", opportunities for leadership and experimentation, reflection on praxis, access to resources, a sense of ownership and "professional safety", and goal-direction.

In the research on school effectiveness one key to school change is to involve students in the process of change (Furtwengler,1985). Schools that "foster" independent learning, support social interactions among, and acceptance of, all members of a school community or organization, provide structure and

order, and create a shared vision through a school mission statement have been most effective in implementing school reform. Through collaborative planning with student leaders, "social agreements about school priorities and the desired behaviours of individuals and groups" can be actualized (p.265).

Positive school ethos is a precursor for effective school change: It provides a working environment in which "staff development is an ongoing, participatory, problemsolving component of school life...a stream of activity that may change over time but whose individual components 'fit' together" (p.33). Characteristics of such schools embody a "cycle of professional interactions" similar to Lewin's proposed spiral of action research [plan, act, observe, reflect]: Griffin (1987,p.32) presents Bentzen's (1974) DDAE cycle of dialogue, decision-making, action and evaluation. A school that creates an environment that is "inviting and rewarding", goal-directed, and supportive embodies an ethos for professional development and school improvement; it is a climate for staff development (Rubin,1987; Griffin,1987).

Equated with successful staff development programs is "a cohesive and stable teacher group". Griffin (1987) refers to the work of Fuller & Brown (1975) who have tracked a "number of professional development stages" that teachers go through. The placement of teachers on this continuum of learning serves as an indicator to the degree of receptivity for teacher involvement in a staff development activity: A teacher in the initial stage of

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determining how one fits into a school environment will be less

able to contribute to "meaningful exchange" (p.33).

> The key is that unless the teacher is developing,
> development in schooling will not occur. The
> corollary is that teachers will develop only when
> there is a need and opportunity to develop, and when
> the rewards go to those who become involved in the
> process (Norman & Gibbons,1987,105).

Norman and Gibbons (1987) have proposed a triadic model for

staff development that integrates three elements from teacher

training programs: self-directed professional development,

curriculum development, and teamwork. The teacher is a self-

directed "curriculum developer" who works together with colleagues

to design and implement programs with the support of school and

district leadership.

> ...curriculum involvement is personally satisfying
> to teachers, represents a useful new role, and
> contributes materially to the professionalization
> of teaching (Rubin,1988,p.171).

Features of Norman & Gibbons (1987) Integrated Staff

Development Model reflect attitudes, skills, and practices of

teachers:

> Such attitudes as openness, confidence, and
> initiative are essential, as are skills in analysis,
> design, and implementation.Equally important are
> experiences of alternative materials, approaches
> and program designs, and experiences in using them
> and developing new designs (p.108).

Involvement in the development of a new curriculum reinforces

teacher understanding and commitment to the elements of the

created program; it is reflective "of a concerted effort to

implement reforms". To ensure that curriculum development is

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cohesive with staff development Rubin (1987,p.176) urges "direct linkage" between goals, "collaborative policy-determination" between teachers and administration, teacher reflectivity, "continuous self-training", and open communication lines for supportive exchange.

> ...curriculum revision efforts, if they are to be efficacious, must contain specific staff development provisions (p.179).

Consideration of curriculum design and staff development for teacher professional growth must take into account teachers' attitudes and beliefs. Rubin (1987,p.179) acknowledges the research by Little (1981):"opportunities for experimentation, collegiality, and idea exchange are psychologically reinforcing". In order for teachers to partake in such a process of development their personal beliefs must be acknowledged, not threatened, and benefits of the process need to reach the student population.

For Norman & Gibbons (1987,p.104), the concept of "self-direction" permeates the school community as an:

> appropriate preparation for lifelong learning, for coping with life in an uncertain future, for active participation in a democratic society, and for coming to grips with the inescapable global crises the next generation must resolve.

Subscribing to this belief evokes a change in both teacher professional development and curriculum design: As teachers learn and grow through the process of developing curriculum they share their skills and processes with their students in order to provide them with the experiences of designing and pursuing their own studies in collaboration with their peers. This paradigm for

school curriculum development draws similarities to the critical social science view underlying the development of programs of education *for* the environment.

One cannot ignore the importance of "support" as key to the initiation and implementation of new programs. "Authority, management and history are formidable forces to overcome in the pursuit of change, learning and participation" (Norman & Gibbons, 1987,p.103). "Fixed and inflexible management systems" are not conducive to school improvement. As Stenhouse (1980) is quoted:

> In short, it is the task of all educationalists outside of the classroom to serve the teacher; for only teachers are in the position to create good teaching.

Thus the role of administration is to encourage and support programs through adaptive strategies, establishing: "a supportive, cooperative ethos in the school", "access to resources", "leadership teams" with shared decision-making power, and flexible, organizational structures that enable new programs to emerge (Norman & Gibbons,1987,p.109).

Hopkins (1987) expands the support system for school change to encompass the school district as critical for creating an environment for change. "In a very real way the school district provides the shelter conditions within which a school can act" (p.121). District policy that is supportive to teacher learning and professional growth, and adaptive to school curriculum initiatives for change, facilitates school reform.

Advisory and Support Groups: Concepts For Change

> ...thinking about groups rather than individuals
> adds leverage to efforts to improve the schools
> (Wideen,1987,p.7).

In Circles of Learning Johnson & al (1984,p.58) propose that

for "effective implementation of cooperative learning procedures

within a school...structuring and managing professional teacher

support groups" are imperative. This concept of a cohesive group

of support can be seen as necessary for any successful long-term

implementation of innovation within a school. Through "goal

interdependence", clear procedures, active participation, and

negotiation of "mutual responsibilities" the group creates an

ethos of empathy, support, and commitment to problem solving. The

benefits of Professional Support Groups to the professional lives

of teachers can affect teacher morale. Rather than isolation from

peers and lack of professional growth through limited sharing of

learning, teachers in professional support groups develop a "clear

cooperative interdependence" among themselves: "Members...have a

sense of camaraderie that significantly increases the quality of

their professional lives" (p.67).

The preceding account of theoretical perspectives for support

to change within schools is not complete without consideration of

of the researcher's role in support of teacher research within

Professional Support Groups.

The researcher, as a participatory inquirer into the process

of change, represents a support or advisory person, provided with

the opportunity to learn "how to change... in ways to facilitate

the professional learning of the teachers" (Elliott,1991a,p.31).
Crucial to the researcher's interaction with teachers in
professional development for curriculum development is
communication.

McLaughlin (1991) states that there needs to be "effective
interpersonal communication" that evolves from the development of
skills such as active listening, paraphrasing, reflecting back,
questioning, summarizing, challenging, goal-setting, and giving
and receiving feedback. As well, communication requires "the
ability to explore the communication that exists in the schools
and groups which are being worked with" (p.80). Supporting group
interaction through five phases (Forming, Norming, Storming,
Performing, Ending) implies the researcher assuming the role of a
facilitator and resource *for* change.

Central to action research is its nature as a collaborative
enterprise; for the researcher, this requires sensitivity to the
needs and relationships specific to each context: It requires
flexibility, adaptation to organizational constraints,
accommodation to teacher needs, coping with disturbance, accepting
loss of autonomy, and adapting to awareness of uncertainty
(Hart,1991,p.52):

> Through a careful process of negotiation and
> decision-making...support teachers set up
> boundaries for their collaborative work which
> accommodated differences and minimized
> difficulties such that...teachers were able to
> work constructively together whatever the
> circumstances and whatever the stage of their
> developing partnership (p.40).

"A collaborative mode of professional practice" for the support

person details procedures that characterize praxis as flexible,

developmental, and self-critical (p.54).

Another "crucial aspect" of the research facilitator's role

is the "understanding and monitoring" of the change process. The

literature cited by Hopkins (1991,p.7) describes three major

stages in the school improvement process: initiation,

implementation, and institutionalization. The work of Campbell

(1991,p.71) invites this researcher to overlay three kinds of

interactions that the researcher can be involved in at different

stages of the change process: intensive, facilitative, supportive.

However, he states that "change must be managed from within

organizations, by members of the organization". Thus the role of

the support person may be cast in light of a "catalyst" for its

affect in "speeding up the process" (Reeves,1991; Campbell,1991);

yet, as a "living organism" open to the influences of the

organizations and processes within the context, the researcher is

continually learning from personal experience and from the

experience of others.

> ...unlike a catalyst, we do not remain unchanged
> at the end of the process (Campbell,1991,p.73).

In the formation of Professional Support Groups for change

there is bound to be conflict and tension through collaborative

exchange and in interaction with elements of school organization

in opposition to change. Hart (1991,p.52) interestingly provides a

different lens to the difficulties in working in a collaborative

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process as "opportunities" for professional learning: a.patterns of working and classroom relationships can be reconstructed; b.alternative approaches to the generation of decisions can be considered; c."pooling resources" and supporting the process can enhance the questioning and inquiry into practice.

At Deakin University in Australia Stephen Kemmis (1987,p.81) is a spokesperson for the establishment of "critical communities of teachers, students and others committed to a critical exploration of their own educational theories and practices". The development of such organizations within schools enables members of such communities to work collaboratively together to re-examine the educational values within their community and to be empowered to act. Through the practice of "self-reflection" teachers function as "professional resources for one another, both within and between schools"; it is considered "the most crucial feature" for the transformation of practice in working to improve schools (p.86).

Reflective Inquiry: A Practice for Change

The common thread linking all of the literature reviewed above is that change is enabled through critical reflection by teaching practitioners.

> Teacher research is ultimately about teachers
> being reflective and critical about, and
> consequently taking more control over, their
> professional lives...it holds the promise of
> reform (Hopkins,1987,p.127).

Todnem and Killion (1991,p.15) define reflection as "the practice or act of analyzing our actions, decisions, or products

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by focusing on our process of achieving them". They build on the work of Donald Schon to present "reflection-for-action", a strategy for encouraging practitioners to "analyze events and draw conclusions" that provide direction in decision-making. It is incipient to the action research process proposed by Kemmis & Carr (1982) that presents a cyclical or spiral format: plan, act, observe, reflect.

> While examining our past actions (reflection-on-action) and our present actions (reflection-in-action), we generate knowledge that will inform our future actions (Todnem & Killion,1991,p.15).

Thus "teaching", in contrast to the conventional view of teacher knowledge being bound by a "well-refined set of skills", is now being acknowledged as "an intellectual activity" within which knowledge is reconstructed through "interpretation, problemsolving and reflection" (Carter,1992,p.121). Barnes (1992,p.16) presents the concept of "teachers' interpretive frames" that encompass not only knowledge about practice but include "an equally complex system of values and priorities along with strategies which enable them to be put into effect". Thus the potential for change in teacher praxis will be influenced by the nature of "alternative" frames" of understanding a teacher may have from which to critically reflect on, in order to guide decisions.

> If administrators wish teachers to become more reflective and analytical, to consider their work in light of alternative frames, they must provide both occasions and rewards for doing so (Barnes,1992,p.26).

Further, the likelihood of change in teacher frames for change in teacher praxis will be affected by the elements in schools that

reinforce use of such frames: Without changes in the organizational structures and processes of the institutions, change is unlikely (Barnes,1992).

Baird's (1992) study into the improvement in the quality of teaching focuses on personal and professional change through systematic inquiry and collaborative reflection. He establishes a triadic relationship among research, learning, and teaching as processes to enhance "metacognition" that informs and directs practice. "Better teaching" necessitates "enhanced" awareness, knowledge, and control of teaching and as well, reflects "dynamic" personal qualities having positive affect.In a collaborative context where time, opportunity and support are provided for reflection on personal and professional development, teaching praxis can change.

> Critical reflection is not only practitioner
> enquiry into practitioners' practices; it
> involves a form of critique which is also
> capable of analyzing and challenging the
> institutional structures in which practitioners
> work (Kemmis,1988,p.75).

For Kemmis (1987,p.81),the creation of "critical communities" for reflective inquiry is critical in the sense of its directive for self-evaluation as the basis of change and innovation in teacher praxis. "Teacher practice" is conceptually more than just a habit of "doing"; it represents "informed, committed action" which is referred to as "praxis":

> ...the Greek notion of "praxis", locates
> practice in a social and political context,
> and against a background of tradition...
> not merely an intentionally structured

> pattern of individual action, but an
> expression of values which have been
> publicly formed and critically developed
> through a tradition (Kemmis,1988,p.77).

It is the task of critical reflective inquiry to explore the
relationships between thought and action, to reinterpret and come
to some understanding of the systems within which practitioners
work, and through changing their own praxis, changing the
situations [institutions] in which they work.

Definitely, this is a challenge for there exists
contradiction between the concepts of educational praxis and
educational institution: While institutions claim to support
schools through their distribution of "money, power and status as
rewards", at the same time they may purport values and interests
that are in opposition to the educational values of schooling
(Kemmis,1988,p.79).The recent Ministry of Education declaration of
the return to grading in the Intermediate Program with its
specific administrative guidelines is anti-supportive to the
theory of continuous progress and teacher praxis embodying such
values. How to overcome the contradiction between education [as a
practice] and schooling [as the institution] creates ongoing
tension in critical reflective inquiry for the purpose of reformed
praxis: It is "almost subversive in itself...political...simply
because it aims to enliven and to enact educational values"
(Kemmis,1988,p.81).

Summary

Each of the preceding theoretical perspectives gives a flavor

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to the breadth of research that has been generated by an "inquiry" into the process of change within schools. The complexity of its organizational social and political structures, and numerous internal and external interactions and processes, has necessitated careful selection of research questions that will contribute to both research and teaching praxis in appreciation of their symbiotic nature.

> "educational action research is a practice which embodies certain educational values and simultaneously puts those values to the test of practice"(Kemmis & Carr,1986,p.209).

Chapter Three

A   METHODOLOGY   FOR   THE   STUDY

> ...then the course of the inquiry is in
> your hands. And becasue it is in your
> hands, you, and therefore your students,
> will be the beneficiaries.
>   (Connelly & Clandinin,1988,p.153)

Introduction

This study is about people - teachers, students,

administrators, community members - who had the opportunity to be

part of a vision of an emerging curriculum that could inspire

lifelong learning. To fully capture this experience an inquiry

into the processes, organizational structures, and features of the

interactions necessitated an approach that could grasp its

"humanness". The "new paradigm" of Peter Schwartz and James Ogilvy

acknowledges the "complex realities", "multiple perspectives",

"mutual causality", and "indeterminate" outcomes in observing "the

world we see" (Lincoln & Guba,1985,p.62).

Conceptions   of   Qualitative   Research

Lincoln & Guba (1985,p.66) argue that "research paradigms

must be resonant at the level of assumptions with the substantive

paradigms that guide inquiry if meaningful data are to emerge".

They describe fourteen characteristics that are congruent with the

nature of this research inquiry: 1. the research takes place in

the natural setting, the school environment; 2. observations of

human interaction, oral discourse, are the primary data collected;

3. intuitive, or "tacit" knowledge, is validated through the discourse; 4. multiple realities and perspectives require qualitative methods of recording, such as videotaping, but also include quantitative measures such as questionnaires as well; 5. "purposive sampling" accounts for values, conditions, and mutual adaptations specific to the school context; 6. analysis unfolds inductively as teacher interactions through discourse are described and multiple perspectives recognized; 7. substantive theory emerges from the data as multiple realities materialize through teacher interactions; 8. the research design is not preconceived as "a priori" but develops visibility as values surface and patterns of interaction take shape; 9. boundaries to the research become apparent as questions to focus the inquiry arise from observation of teacher discourse; 10. interpretation of the data necessarily varies in coherence with the local multiple realities and therefore necessitates "negotiated outcomes" by the people involved in the context; 11. the trustworthiness of the research plans for the use of procedures that enhance credibility, transferability, dependability, and confirmability;

12. interpretation of the data needs to be described in terms of the local contextual particulars so that transferability becomes a quality of the research trustworthiness; 13. further, that transferability is tentative due to the contextual variance in value systems, interactions, and influences "from site to site"; 14. finally, the case study represents the medium for "thick description" of the multiple realities arising at the site.

"Naturalistic inquiry" is "the paradigm of choice" (Lincoln & Guba,1985,p.50) since it is reflects not only the characteristics of the "new paradigm" of Schwartz & Ogilvy, but because it can be expressed as a "snapshot of reality" in the form of a "case report".

> ...cases are potentially powerful pedagogical tools for helping people develop teaching knowledge...cases present teaching 'as it is - infinitely complex, changing, and uncertain' (Carter,1992,p.112).

The primary aim of this case study is to familiarize the reader with the details of the events observed during the inquiry and create opportunities for their meaning and interpretation to be viewed from a number of different perspectives. Its manner of reporting focuses on "thick description" to facilitate transferability; respecting confidentiality by the use of pseudonyms for maintaining anonymity, demonstrating an "adequate" audit trail, selecting the most relevant information, and coping with aging data have been some of the difficulties that have required consideration with its use (Lincoln & Guba,1985,p.215).

In the mid-1970s the recognition of teachers as "central to the curriculum exercise as doers, making judgments based on their knowledge and experience and the demands of practical situations" initiated the "teacher-as-researcher" movement (Kemmis & Carr, 1986,p.18). The earlier work of Joseph Schwab had laid the foundation for "school-based curriculum development; the establishment of the Humanities Curriculum Project by Stenhouse had legitimized teacher "professional autonomy and responsiblity".

> ...the active participation of practitioners
> in the research enterprise is an indispensable
> necessity (Kemmis & Carr,1986,p.126).

Kemmis & Carr (1986,p.124) advocate "that the proper concern of educational research is with formulating theories that are grounded in the realities of educational practice". Their work is rooted in the conceptualization of Jurgen Habermas's "critical social science" in which self-reflection serves as a "therapeutic self-knowledge" that can enable individuals to intervene and change their limiting social conditions: It is a social process inviting collaboration and an "integration of theory and practice as reflective and practical moments in a dialectical process of reflection, enlightenment and political struggle" (Kemmis & Carr 1986,p.144):

> It is human in the sense that it involves
> active knowing by those involved in the
> practice of social life, and it is social
> in the sense that it influences practice
> through the dynamic social processes of
> communication and interaction (p.146).

Habermas's theory of communicative competence supports group decision-making through the process of discourse - "rationality of arguments" - that guide action. Application of this theory was evident in teacher team meetings which represented "learning communities" organized for "enlightenment" ["to learn from the experience and context of the curriculum"] under the condition of "freedom of discourse" [speaking "openly and freely"] to establish "mutual understanding" for guiding consensual "action" (Kemmis & Carr, 1986,p.147-148).

This research is a case study of a team of teachers within a

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supportive school community learning together through
collaborative action research, fostering curricular and
professional growth; it is an inquiry into the social processes
that enabled teachers to develop an "enlightened" curriculum
through collective sharing of their understanding of praxis and
school organizational constraints; it is an analysis of teacher
discourse - "collaborative articulation" - with the purpose of
illuminating features of the interactive dialogue that illustrated
qualities of environmental education curriculum and support for
teachers "in change".

The Design

The initiative of this research inquiry emerged from the
conversation with a school colleague one day in June 1992, sharing
a vision of a "Winter Studies Program" that would facilitate
students in BEcomING life-long learners through meaningful
"outdoor" experiences that would necessitate curriculum
integration and community school support. This particular teacher
had long demonstrated expertise in "outdoor" crosscountry training
programs that had been organized for grade six students annually
in the school; the challenge to extend this program into an
innovative curriculum necessitating teacher team planning and
action was waiting for the opportune context.

The Context: A Community Setting

> The context in which educational change is
> pursued is everything (McLaughlin & Lieberman,
> 1992,p.67).

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The context for this case study necessitates a three-dimensional lens that considers the organizational structures in place, the community of learners, and the environmental climates at that time impacting the school community.

Organizational Structures

The physical structure of the context is unique in the school's close proximity, approximately 20 kilometers distant, to a Winter Ski Resort. This presents the school with opportunities to engage in both crosscountry and downhill skiing, snowshoeing, and outdoor survival camping. Adjacent to the Winter Ski Resort there is a network of crosscountry trails under provincial park and local environmental group management that harbors wildlife and presents natural habitats for seasonal study.

In consideration of the "politics" within the school community and in light of provincial curriculum guidelines and recommendations, teacher autonomy and responsibility for the creation of meaningful student learning experiences was supported by the administration. In fact the administration, in collaboration with the grade six and seven teachers, had taken the initiative to restructure unigrade classrooms into multiage groupings of four grade six/seven classrooms.

> Simply defined, multiage grouping means dropping traditional grade-level designations in favor of teaching older and younger students together in the same room (Black,1993,p.17).

The concept of "multiage grouping" is both a philosophical and physical structure that can enable the development of

curriculum within a political structure of "collaborative action research". Its support necessitates acceptance of the following assumptions: one, that learning is a "continuum" of "developmentally appropriate instruction" in which children are able to learn at their own pace, mastering concepts and skills before proceeding on; and two, that parent support, relevant resources, and social skills are factors affecting the success of multiage grouping. It is a concept rooted in "the one-room schoolhouse" and has had a variety of labels attached to its ideology: family grouping, the nongraded classroom, and continuous progress. Its advantages are flexibility in time mangagement and grouping of children for relevant learning. Those who aspire to its implementation believe "students learn by being active and engaged, thoughtful and reflective" (Black,1993,p.17).

The reorganization of the grade six and seven classrooms from unigrade classrooms to multiage groupings provided the opportunity in which teachers could cooperatively learn together - to design curriculum around broad themes, to plan meaningful learning experiences in which children of similar age could interact together from time to time, and to become more reflective of their praxis. What was fundamental to its success was collective aggreement by all of the teachers involved to work collaboratively as a team.

The economic context was timely. The District Curriculum Development Project Committee had alloted a grant of $4000 for the development of a local innovative curriculum during the 1992-

93 school year. It required a sponsor, in this case the researcher-
teacher, to govern the administration of the funds and to provide
a summary report of the year events. Through a shared decision-
making process the funds were used by the team of five
intermediate teachers for teacher release time in order to meet
together during six school mornings in 1993: January 21st,
Februrary 2nd, March 1st, March 30th, April 19th, and May 17th.
The economic context was interwoven with the political context of
"collaborative action research": Teacher team meetings were
occasions for teachers to "collaboratively articulate" and
reflect on their perspectives on teaching praxis and theory, and,
to collectively plan for the implementation of curriculum which
they were designing in consideration of one another's area of
expertise and teaching "comfort zone". An underlying socio-
cultural context, from which teacher collegiality and camaraderie
could emerge from these meetings, was initially latent: The team
of intermediate teachers were familiar and accepting of one
another's classroom praxis, supportive to the school's directive
for "lifelong learning", and often engaged in similar athletic
after-school activities with students.

The socio-cultural context of the school community was
primarily a stable, middle-class economic base in a rural
environment. Predominantly Caucasian, the school was supportive of
the "community school" philosophy in which parents, teachers,
students, and administrators were "partners in learning".
Community members were viewed as a rich resource to the school for

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enhancing lifelong learning; there was an active Parent Support Group with ongoing staff involvement. The vision of a "student-centered" school was supported to varying degrees depending on the individual viewpoint of the school community member. At the time of this research inquiry the school was undergoing the process of Provincial Accreditation; its impact on the socio-cultural context of the school was evident as it created more opportunities for staff collegiality to develop through shared decision-making in establishing school goals and action plans over a five year period. Features of tension and weariness, from the variety of "teacher team" meetings, became more visible as the school year unfolded.

A Community of Learners

The elementary school had, at that time, a population of approximately 425 students and a staff of 21 teachers. Within these demographics, approximately 120 students were placed in the four grade six/seven classrooms with three full-time intermediate teachers assigned to three classes, and the fourth class having administrative and part-time teacher instruction. All of these five teachers, four male and one female, had been at the school the previous year and teaching at these upper elementary grades. Their level of receptivity for collaborative involvement in the design and implementation of the Winter Studies Project as a locally developed curriculum was positive; each teacher volunteered to become part of the research inquiry by giving their written consent (Appendix A).

The teacher-student rapport at this school was friendly and respectful; the staff had developed a consistent discipline policy and focused on conflict resolution/management as the framework within which to problem solve. The right of all school community members to have a warm and caring school environment in which to learn was advocated.

The community members outside the school, inclusive of parents and interest groups, supported school initiatives and had volunteered their time and expertise in support of the learning environment.

Administration was comprised of two male educators assigned the roles of principal and vice-principal, the latter being one of the intermediate team teaching a grade six/seven class. Their approach to management was clearly a "team approach", inviting collaboration for shared decision-making and encouraging teacher autonomy and responsiblity through support to individual and group staff development projects. Both were informed of the current provincial educational initiatives, demonstrated leadership in modelling teaching strategies and skills, and advocated a view to enhancing the learning conditions for all school community members.

In summary, this "community of learners" was a cohesive group of teachers, students, parents, and school administrators who interacted cooperatively and collaboratively to create a positive school environment.

The Environmental Climates

Impacting school community initiatives are both the school district and provincial educational climates at the time. District educational organization reflects the provincial political, economic, and social structures. In Spring 1993 there was a political and economic platform for decentralization, assigning school districts responsibility for curriculum interpretation and meaning, encouraging teacher autonomy and professional growth through site grants for implementation of school curriculum and assessment initiatives. The socio-cultural structure advocated: "A quality education system assists in the development of human potential and improves the well-being of each individual person" - "the educated citizen", having "the ability to think clearly and critically, and to adapt to change". To this end a set of interrelated goals were defined to guide the school, family, and community - "partners in education" - to "cooperate to create the climate of safety, success and mutual respect necessary for lifelong learning"(Ministry of Education,1989,p.1).

In essence, the environmental climates at the time of this research inquiry were supportive to school "collaborative action research".

The Research Inquiry: An Unfolding Process

Action research is simply a form of self-reflective enquiry undertaken by participants in social situations in order to improve the rationality and justice of their own practices, their understanding of these practices, and the situations in which the practices are carried out (Kemmis & Carr,1989,p.162).

Two requirements are implicit for action research inquiry: one, the desire to improve "praxis", understanding of that praxis, and the conditions in which that praxis takes place; and second, the willingness to revise one's praxis through "involvement" or active participation in the process. It is "abundantly clear" that, for action research, teachers need to be "actively engaged in the process...for them to gain control and power over the projects that they are to implement" (Wideen,1987,p.2).

This could not be more apparent than the initial situation of the "research agenda" [a request for teacher participation in developing district science curriculum assessment resources]: It received little response from teachers in the district. If the research was to be meaningful it had to be grounded within a school context and relevant to its members.

> Insofar as the products of man are to have educational consequences, the fit (level of discourse) between the audience and the message needs to be taken into account (Eisner,1985,p.114).

In this research inquiry the team of five intermediate teachers of four grade six/seven classes provided the focus for the inquiry: the development of a local curriculum, the Winter Studies Program. "How does a team of teachers design, implement, and assess such a project?"

> ...the design of a naturalistic inquiry... *cannot* be given in advance; it must emerge, develop, unfold (Lincoln & Guba,1985,p.224).

From the experience of this researcher, curriculum development by teachers is previously unknown territory. It poses

the questions: "Where does one begin?" "What is it that may have educational significance?" Ultimately, it is the team of teachers who share autonomy and responsibility for its development and implementation; specifically, it is the researcher who facilitates the process, providing opportunities for all members to participate in action research - shared decision-making through collaborative discourse.

Lincoln & Guba (1985,p.235) present three phases to naturalistic inquiry: first, orientation and overview; second, focused exploration; and third, member check. A summary of the approach for each of these phases follows.

Orientation and Overview

Action research in school-based curriculum development entails a "systematic inquiry" to its collaborative process. In reference to the early work of Kurt Lewin, it is a "self-reflective spiral of cycles of planning, acting, observing and reflecting" (Kemmis & Carr,1986,p.162). Likened to a computer desktop folder, the researcher consciously invoked a "self-reflective cycle" for inquiry into teacher interactions during curriculum development superimposed over the teachers' collaborative process of inquiry - planning, acting, observing, and reflecting. Orientation to this approach required the researcher to present the team of teachers with a "theory for action research" and to evoke a discourse of rationality. It encouraged a "theory in use" [the theory-practice dialectic]; each team member agreed to maintain a reflective log about their

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experiences during this project and to actively attempt to implement this "self-reflection" process into their classroom program as a strategy to develop student critical thinking.

"How do people make sense of the world around them?" Piaget and Vygotsky "point to the centrality of oral discourse in the process of making meaning...that children use language as the basic means for testing their perceptions and continually shaping their view of the world" (Marzano & al.,1983,p.61). Discourse is a social process in which "speaking to oneself or to others actually shapes knowledge and beliefs"; it serves to clarify reasoning and to create "positive interdependence" through human interaction.

> Philosophers have long stressed the social
> and ethical benefits of oral discourse in
> education...such traits as intellectual
> empathy, fairmindedness, faith in reason,
> and movement toward reciprocal rather than
> egocentric attitudes (Marzano & al,1988,p.63).

Through collaborative action research discourse "professional knowledge...unique perspectives on teaching and learning" are shared; opportunities for teachers to change their praxis and "associated learning environments" exist (Tobin,1991,p.109). Thus the role of the researcher emerged as a facilitator for discourse - the generation and contemplation of ideas and viewpoints leading to the elicitation of action plans for the development of curriculum. Integral to this was the inclusion of "systematic inquiry": The researcher ensured, through the establishment of a "meeting agenda", that both individual and collective "self-reflection" was a component of collaborative action research. The

experience encouraged all participants to grow professionally.

Methods of Analysis: Data Collection

One of the most effective ways to collect discourse is through the media of film since it allows for the interpretation of both oral and body language, and has the advantage of "replay". Lincoln & Guba (1985,p.240) attribute videorecording with "the greatest fidelity" as a "data recording mode" for reproducing "what happened".

> ...the availability of videotape recordings and cinematography now make it possible to capture and hold episodes of classroom life that can be critically described (Eisner,1985,p.115).

Data collection instruments consisted of videotape recordings of each of the six teacher team meetings, a videotape of student self-directed learning challenges in action, the "celebration of student learning" open house, and a follow-up of the Winter Studies Program approximately one year later (June 1994). Each videotape was backed by an audiorecording of each teacher team situation. Teacher self-reflection journals were encouraged; one teacher submitted evidence. Teacher and student questionnaires regarding the assessment of the Winter Studies Program were designed, administered, and collected. Samples of student "thinking books" or "self-reflections" throughout the program were gathered by team members and contributed to the data collection. From the beginning of the case study a record of researcher-teacher observations and reflections was logged.

Focused Exploration

Phase two, as the name suggests, is the occasion for initial data analysis to refine the boundaries of the study and to guide further inquiry and data collection (Lincoln & Guba (1985,p.235). Miles & Huberman (1984,p.22) are in congruence with a "systematic" approach, a "mimimal set of reporting conventions documenting successive moves through data collection, analysis, and interpretation". They present a number of methods which were adapted for use during this inquiry.

Methods of Analysis: Data Reduction

What Miles & Huberman (1984,p.25) refer to as "contact summary sheets" were the researcher "meeting agenda forms" that guided team meeting discourse (Appendix B). These forms not only outlined topics for articulation but posed questions to direct inquiry for collective planning, acting, observing, and reflecting. They served as record sheets for "on-site memoing" as teachers articulated their ideas, opinions, and plans for action.

Given the model of action research and its collaborative reflective process the team of teachers transformed into "teachers as researchers"; the team meetings emerged as "site analysis meetings", "well-structured occasions to step back from the flood of fieldwork and take interim stock". In the early stages of the development of the curriculum the researcher, in consensus with the team, compiled an "interim site summary" in application for an additional grant of funds to support the extension of the 1993 Winter Studies Program into the following school year: to evolve

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the science performance assessment component to other areas of the program; to plan for networking opportunities with other schools to share, and extend, the program; to continue to support "continuous progress" within the Intermediate Program by working with the secondary school in sharing "portfolio assessments" from the program; and most instrumental, to encourage teachers to continue to take on the role of "action researchers" within their school by providing "release time" to discuss, reflect, and support change.

In conjunction with the ongoing record of researcher observations in the form of a log or journal was "memoing":

> The memo is a brief conceptual look at some aspect of the accumulating data set: an insight, a puzzle, a category, an emerging explanation, a striking event (Miles & Huberman,1984,p.25).

This strategy has been ongoing, both during and post data collection, whenever the researcher has been presented with circumstances relevant to the focus of this case study.

> Memos generate new memos and rememos or rewriting memos.Sorting and writing do also. Reading in the field...generates memos. Thus while the memo stage begins during the joint collection, coding, and analyzing of data, and peaks as coding saturates, *it never is over* (Glaser,1978,p.88).

Analysis of the data is interwoven with "data collection" for the purpose of discovering a "grounded theory". Adherence to the constant comparative method, an approach utilizing "explicit coding and analytic procedures", inductively guides theory generation that "requires only saturation of data – not

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consideration of all available data"(Strauss & Glaser 1967,p.104).

> The constant comparison of incidents in
> this manner tends to result in the creation
> of a "developmental theory"...it especially
> facilitates the generation of theories of
> process, sequence, and change pertaining
> to organizations, positions, and social
> interaction (p.114).

Application of the constant comparative process evoked four stages

of data analysis: 1. coding events into "categories"[processes;

organizational structures; plans of action; features of discourse]

and comparing them to "previous incidents" such that "theoretical

notions" began to be recorded as memos (p.107); 2. constant

comparing of incidents with the properties of a category,

resulting in the assimilation of properties within a category and

theory conceptualization [processes: critical self-reflection,

collaboration, interpersonal communciation; school organizational

structures: political, economic, socio-cultural; interactions:

consciousness of change, meaningful experiences, personal

dynamics; features of discourse: tension, humor, metaphoric

analogy, negotiation, modelling of praxis] 3. "delimiting the

theory" through the refinement of the theoretical focus to the

most relevant properties and through saturation of coded

categories (p.111)[processes of change: critical self-reflection,

collaboration, interpersonal communciation; school organizational

structures in change: political, economic, socio-cultural;

features of interactions for change for students, teachers,

supporters: consciousness of change, meaningful experiences,

personal dynamics]; 4. "writing theory" by arranging memos to

their respective categories (p.113) and synthesizing their meaning. Throughout the process the subconscious was plagued by the question, "What is meaningful about what is observed?". One memo recorded:

> Glaser (1978), in his book Theoretical Sensitivity, speaks of personal pacing recipes that can involve "two steps forward and one back". In the initial stages of the research analysis it seemed as if it was "one step forward and two steps back". For it appears that after observing a number of hours of teachers' dialogue in an unchanging setting, with much coding and memoing, there is the need to read the literature to illuminate the variety of features and theoretical perspectives from which a researcher can select to interpret the data. Thus there emerges a pattern or personal pacing recipe for "cycling" between the data and the literature.

Member Check

The third and final phase before the publishing of the report is member checking, a process of inviting members of the study to critique the interpretations and synthesis of the data compiled (Lincoln & Guba,1985). This technique is "crucial" in the planning for "trustworthiness"; "negotiated outcomes", through member discourse, establish credibility to the interpretation of the data during the inquiry.

Throughout the research inquiry "informal" member checking was in place: the use of "active listening" strategies, such as questioning and paraphrasing teacher dialogue during teacher discourse, served this purpose; the replay of the videotape of the "Winter Studies Fair" (March 12th) during the April 19th team meeting for teacher assessment of student learning provided an

occasion for exchange and verification of opinions; near the end of each teacher team meeting the researcher questioned for input for approval, correction, and/or extension of ideas to plan an agenda for the next team meeting. A more formal member check occurred in the form of a "Winter Studies Program Site Report" for the District Curriculum Project Committee. This report summarized the progress of the curriculum development and presented an overview of the allocation of funds throughout the school year, 1992-93; it was read and acknowledged as acceptable by witness of all teacher team member signatures.

Trustworthiness

The value attached to the final report can only be judged in terms of the "trustworthiness" of the findings of the research inquiry. To establish credibility, transferability, dependability, and confirmability to the data the following techniques were implemented.

Credibility

Lincoln & Guba (1985) present three activities that increase the "probability" that research findings will be credible: *prolonged engagement*, *persistent observation*, and *triangulation*.

In this case study, the nature of the researcher's experience at the school enhanced the establishment of trust among colleagues, particularly at the intermediate elementary level: Having been the teacher of the school-based Learning Centre for three years, the researcher had gained rapport with members on the team through collaboration in the development of Individual

Educational Programs for students in their classrooms; further, participation on the school internal committee accreditation team enabled the researcher to become astute to the multiplicity of teaching approaches within the uniformities of praxis. Each of these situations enabled *prolonged engagement*.

As a facilitator of the team in "collaborative action research", the researcher had opportunities to pursue *persistent observation* through participation in, and observation of, teacher discourse. Video and audio tapes of each of the teacher team meetings for post collection review permitted focus on the "dynamic features" of discourse and served as a mode of *triangulation* in comparing fieldnotes and memos to the observation of "salient" characteristics in the "replay" of each event.

With the focus of the research narrowing to the analysis of teacher discourse it was not necessary to analyze all the data collected. Both student and teacher reflective logs and questionnaires have been stored as "archival" material. This implies that they can be utilized for cross-referencing the data by *triangulation* when conflicting information surfaces; also, it allows for *referential adequacy*, the opportunity to compare further to reinforce credibility to the data.

Transferability

The degree to which a case study may be transferable to another context is highly subjective, dependent on the reader's contextual background and interpretation of the research findings.

As Lincoln & Guba (1985,p.316) contend, it is the researcher's "responsibility to provide the data base that makes transferability judgments possible"; it is the reporting style of "thick description", which "aims at describing the meaning or significance of behaviour as it occurs in a cultural network saturated with meaning" (Eisner,1985,p.112), that creates opportunities for transfer.

Confirmability and Dependability

Although credibility and dependability are interlinked, the "inquiry audit" is recommended as a technique within which to establish both dependability and confirmability: acknowledgement of dependability by acceptance of the inquiry "process"; confirmability by coherence of the data to the "product" (Lincoln & Guba,1985,p.318). Confirmability is strengthened by the use of an audit trail: In this study "raw data" in the form of video and audio tapes, meeting agendas, and written fieldnotes is readily available for examination; a journal, illustrating data reduction, contests to a developing process of constant comparative analysis as each videotape was reviewed; personal notes of a self-reflective nature are memoed throughout a researcher log of observed events.

The Challenges to the Study

The selection of "collaborative action research" as a methodological approach to the research inquiry presented a number of challenges to be met.

The physical constraints inherrent in school organization created difficulties for teachers to collaborate "for reasons of time and logistics and support"(Stenhouse,1983,p.214). Despite the allocation of funds for teacher day release time there was concern by teachers about "being out of the classroom", that sense of "falling behind" in reaching the expectation to cover "The Curriculum". As one teacher expressed:

> I think meetings at the school level right now
> are really quite heavy for everyone...like after
> school meetings and so on...It would have to be
> an early morning or an evening...

To consider the design and implementation of a curriculum with a theory based in education *for* the environment [education *in* the environment inclusive of this concept] created the challenge to circumvent the space and time constraints such as timetabling, subject areas, conventional paper and pencil assessment, and classroom walls (Spork,1992).

The role of the researcher as facilitator for the team meetings presented the dilemma of "balancing" agendas: The interactive discourse that evolved from the meetings may have been more directed to the researcher's agenda than by a "substantive agenda of issues of real interest and concern" to teachers (Robottom & Hart,1993,p.62). Certainly this would bias the interpretations of the data.

> Always, however, the reflections that are
> constitutive of the most meaningful new
> understandings are directed by the interests
> of the individual rather than by an externally
> originating agenda (Obern & Artz,1992,p.154).

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"Role conflict" was experienced during the initial teacher team meetings as the researcher tried to distinguish between the perceived role and actual role of "facilitator". As quoted by Tripp (1990,p.165), Hargreaves (1989) cautions against "contrived collegiality": "the role of a facilitator has more to do with relationships among participants than with methodological and administrative aspects of the project". Again this presents itself as the dilemma of "balancing" roles: to facilitate collaborative action research and, at the same time, implement systematic inquiry. With regard to the latter, Hopkins (1991,p.40) warns that the cyclical process of action research may "trap teachers within a framework which they may come to depend on and which will consequently inhibit independent action". Other challenges that emerged for the researcher as "balancing" issues were: loss of autonomy in facilitating discourse, and personal ideology and praxis within a collaborative group project.

To assume the role of "researcher" has been an occasion to "walk in another's shoes". One memo expresses the challenge:

> There is something fascinating about visualizing
> what mountaineering would be like: Untravelled
> territory holds a glory all its own in the
> journeying mind. But savoury contemplation
> loses form and meaning with time; there is no
> substance to mirage. To begin the quest for
> the "real" experience necessitates careful
> planning of equipment to take, and trails to
> follow. A map and compass help to guide the
> way, but the "authentic" experience, the
> long-lasting impression, only emerges as you
> go forward.

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Summary

This chapter presented naturalistic inquiry as the paradigm within which a critical social science theory was rooted. A collaborative action research methodology was framed within an inquiry of systematic research.

The case study is an analysis of teacher discourse, collaborative articulation. It had the aims of: illuminating the dynamic features of dialogue that characterized teacher interactions and the processes of change in curriculum development; examining the organizational structures that supported change; and legitimizing the "research" as collaborative action research. The context in terms of the organizational structures, community of learners, and environmental climates at the time was crucial to implementing the inquiry.

The research unfolded through three phases: orientation and overview applying Kurt Lewin's "self-reflective spiral", focused exploration utilizing the constant comparative method , and member check relying on informal techniques for "negotiated outcomes". Techniques for ensuring the trustworthiness of the research findings are accounted for. Challenges to the study have been the school organizational structures, the role of facilitation and the issue of "balance".

Chapter Four

A   DESCRIPTION   OF   THE   STUDY

> ...teachers have a great deal to contribute.
> Their first-hand knowledge of children, the
> classroom world, parental concerns, and the
> bureaucratic structure of schools, often
> enables them to engage in productive, pragmatic
> research (Rubin,1988,p.170).

Introduction

This chapter, together with chapters five and six, represent

the analysis of the data collected. One of the difficulties in

analyzing the data has been "how" to sift out the "features" or

"nature" of the teacher discourse in the action research process.

Essentially, it has been a problem of defining the word "features"

and its translation into the practical world of the teacher

(Reeves,1991,p.18). Further, data analysis has been complicated by

the "complexity" of structures that affect teacher interactions

with their peers: different attitudes, conflicting perceptions of

praxis, alternative styles of teaching, and varying levels of

commitment and energy for the development of a new school program.

Chapter four focuses on the features of teacher discourse

that characterize the emergence of a curriculum embodying the

principles of environmental education. Episodes of dialogue in

teacher interactions illuminate the context of collaborative

action research; their examination provides insight into teacher

praxis. The "rich description" is purposeful; it is meant to

address "the charge" that "action research is always biased

because it involves the researcher in analyzing his or her own practices" (Kemmis & Carr,1986,p.192). Certainly, the interpretation of the data is guided by this researcher's values and interests. Therefore, the record of dialogue has undergone intensive corroboration with videotapes, audiotapes, and headphones to ensure that the reader has the optimum opportunity to reflect on the discourse and come to one's own understanding of the "nature" of collaborative action research.

Research Question One

What features of teacher discourse characterize teacher interactions with colleagues and the curriculum content?

"Feature" is defined by The Merriam-Webster Dictionary as "a specially prominent characteristic". During the analysis of teacher discourse several features emerged as the "driving" force that maintained the momentum - energized - group interaction for "collaborative articulation". These "dynamic" features were commonality of understanding of praxis, narratives of experience, and tension.

Dynamic Features of Teacher Discourse

The videotape is an invaluable resource - a "narrative of past experience". It represents a "rich" memory of the complexity of features of teacher interactions interwoven into a story set in time. Its ongoing review enabled the transformation of dialogue into meaningful "chunks" of learning about the group collaborative

process; these "explanations" reflect the values and beliefs "that were salient to the manner in which...[teachers] conceptualized teaching and implemented the curriculum" (Tobin,1992,p.11). Evidence of teacher praxis emerged.

Commonality of Understanding of Praxis

Collaboration requires teachers interacting with one another to reflect on their own, and their peers', "realities and their perceptions and be prepared to learn, modify, and change" (Reeves,1991,p.22). Each member of this intermediate team had expressed a "commonality of interest" (Reeves,1991) by their willingness to partake in this study, and by their commitment to develop a new school program of Winter Studies. As Bill reflected back on his initial involvement in the development of the program, "I was pretty uncomfortable, what I was giving up to get involved in this." For all, participation in the beginning was travelling unmapped territory:

> Ed: ...in the early stages, I didn't know where this
>   this was going, where it was coming
> Neil: I think we were all at different places.
> Ed: Well, you guys didn't look like it. I felt like it.
> Neil: Oh, I think we all, basically we were.
> Ed: Really?
> Neil: Yeah...

But this was not a new revelation. As one administrator commented, "I still just feel that I'm groping in the dark. My impression is that alot of us, in all aspects of the system, feel like that's what we're doing." This "shared understanding" of experience was one of several metallic threads to bind the team into a cohesive support group. As the study unfolded teacher discourse revealed a

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"commonality of undertanding of praxis" that encouraged the development of a "clear cooperative interdependence" reflective of Professional Support Groups (Johnson et al,1984,p.63).

An occasion to exemplify this occurred during the second teacher team meeting. Prior to this meeting the researcher had introduced all team members to a number of research articles that presented the "theory" for reflection in collaboration and action research. Given time, one morning, to contemplate these papers, the team met to articulate their understanding of the research and to extract the relevant parts for the restructuring of teacher praxis.

Researcher: For our purposes in our group is that I felt that we are not only going to reflect on what we're doing in our classroom throughout Winter Studies but we are going to question things about, "What are we doing in teaching?" "What is teaching all about?" "What are we doing in science and it's that "reflection on the practice" of a science...

Neil: That one relates directly I think to this other one by John Powell. I found really interesting, "The Study of Teaching".

Patricia: Yeah.

Neil: That one was the most practical.

Bill: That ("The Importance of Reflection in Improving Science Teaching & Learning" by J.Baird & al) points out the fact here that our own "metacognition precedes that of the students".

Researcher: Yes, really.

Patricia: Yes.

Researcher: Yes, looking at that 2nd page there, I remember that Neil had brought up the importance of metacognition and in that 3rd paragraph there on the next page there...the attempts indicated that "time, effort, and support" are the three necessities of change. And so that becomes justification of why we need the funds for the group to meet for our time, the support all of us can offer to each other, and the effort that all of you are putting into it just by deciding to come here and work on Winter Studies.

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        Tony: That reflection is whatever we are doing here
              right now.
  Researcher: Yeah.
        Bill: I starred one thing...that I thought was really
              heady...at the bottom of the page, 1988 In-service,
              bottom right, where it says, "I realized how
              important learning from peers is!" Feedback,
              encouragement, and acceptance are very important.
    Patricia: Yeah.
        Neil: That was Mr. Bill Scott with his reflection on...
              [collective laughter]
      Sheila: Now back to you at the football game.
              [collective laughter]
```

The atmosphere within the meeting room that morning was one

of warmth and trust. Neil, Bill, and Ed had been teaching at the

upper intermediate elementary grades for at least five years

together at the school and emanated respect for their different

styles of teaching; in previous years, they had been observed in

team planning for "end of the socials studies unit" celebrations.

The administrative team, "Tony and Mike", supported teacher

endeavors to create meaningful learning experiences for children.

Action research, as a viable process for creating a program of

Winter Studies, was "the only way to do it":

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        Tony: ...to do what you are asking us to do now, to
              be both the participants and the subjects, is
              pretty neat.
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Although this was Patricia's second year at the school, her

previous year role as "Relief Teacher" for teacher release time

had required cooperative teacher planning with Neil, Bill, and Ed.

During this study, Patricia was team teaching one of the grade 6/7

classes with Mike, the vice-principal of the school. Their working

relationship appeared harmonious. In comparison with the years of

teaching experience that members of the team had acquired,

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Patricia was relatively new, having started in 1987: "I arrived in teaching in the midst of the crumbling and the void...so there are bits and pieces depending on where I taught and who I taught with." Her opinion on student teacher training as preparation for curriculum implementation was valued:

> Tony: So Sheila, what's your perception of new teachers that are coming out that traditionally when we had a system where you came out and did your apprenticing in a system that was already well-established and now we have a system that's undergoing massive change... what does that perception...how did you react to that?
> Patricia: I don't think the university prepares them. I was really prepared in alot of ways because I've had to cope with so many changes in life that I've just learned that
> Mike: That's your background personal experience.
> Patricia: That's my personal experience...it's not training.
> Mike: Those people that are coming out of the training institution are not getting those ideal experiences.
> [collective discourse]
> Ed: Then they're not in touch with what the ministry is doing then.
> Neil: No.
> Mike: They have not changed.
> Patricia: They know what the ministry is doing but they haven't changed...Some of the people who would be really valuable to speak to are...(those) that have lived through it and are now, just enough outside in having some experience in running around from A to B to C to D...but that's why Ed, I understands alot of your feelings because I haven't, I sort of feel in the midst of it, so I'm willing to
> Ed: I feel out of it [laughing]
> Patricia: to give this [Winter Studies Program] a whirl too.

Sheila exemplifies empathy in acknowledging Ed's earlier assertion: "I'm game to do this now, but boy, I feel like I'm flailing around in deep waters, not comfortable". Her ability to relate to Ed's discomfort and inject playful humor supports a developing collegial relationship within the team:

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> Ed: Reflection in action. That's an oxymorn, isn't it?
> Patricia: I always like the last portion of that word,
> "moron".
> [collective laughter]

Change, or the anticipation of change, is a commonality of understanding in teaching today. As Bill articulated, "We've moved from operating within a strict curriculum to inventing curriculum which is scary for some." Change in praxis necessitates teacher change:

> Bill: The teachers that survive are the ones that take
> incremental change; they take the change that
> they're comfortable with and they put their
> framework around it, and then accept more
> change and build more framework, and they become,
> alittle, more at ease with
> Patricia: and end up looking at very big headaches
> [collective laughter]
> Bill: and if in five years they haven't got it, they
> haven't got it and they leave.
> Tony: Well, that's that whole change process in the
> face of change, the face of change...

To replay this scene would evoke an ethos of camaraderie that was emerging as teachers began to reflect on both their professional and personal backgrounds. Collective laughter seemed to symbolize the internalized understanding that emanates from "experiencing" one's profession, inclusive of the cognitive and affective elements.

Narratives of Experience

Linked to "commonality of understanding" in teacher discourse was the feature of "narrative of experience"; "particular orderings of prior experience, brought to bear on new situations ...(that) yield new ways of telling a story of who we are and how it is that we are doing what we are doing" (Connelly & Clandinin,

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1988,p.153). Such vignettes provided momentum for linking personal experience to praxis. This was evident during the second meeting to discuss the research papers that supported the "theory" for reflection. One of these, "Thinking Books" by Susan Swan and Richard White", became instrumental as the *theory* behind teacher praxis - the use of "thinking books" in the Winter Studies Program.

All members of the team were in support of "questioning" as a strategy to promote reflection on action. There was a commonality of understanding of children at the elementary level as not having, as Ed expressed, "enough knowledge, experiences, background":

> Mike: ...I don't believe our kids have the tools
> necessary to be able to really thoughtfully
> think about those personal background
> experiences, to be able to formulate the
> questions that need to be asked in order
> for them to go into those personal
> awarenesses, or sense of purposes.

The ability to formulate questions was key:

> Patricia: That's the part of the article "Thinking
> Books" and that building of the reflection
> and not being just the acceptance of what's
> being said and the questions, "Can you think
> of anywhere else you've seen this structure?"
> or whatever, over time.
> Neil: Exactly.
> Mike: That's right. So we're developing kids who are
> going to be a heck of alot more reflective...

Bill drew attention to the distinction that "children must distinguish what they did in class and what they learned" (White & Swan,1990,p.5):

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       Bill:  ...to encourage parents to ask more in depth
              what they learned, not what they did in class
              "What did you do in class son?", but "What did
              you learn?"
       Mike:  Here's my bent on this. Everyday for the last
              10 years that my kids have been going to school
              I always say to them, my own kids, "Ask good
              questions. Make sure you ask a good question
              today." Then I'll check with them. "Did you ask
              a good question?" "Didn't get a chance!"
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In reflecting on his personal "schooling" experience Mike

asserted, "I didn't get a chance to ask the questions". The team

voiced consensus that "Kids have to have that opportunity to ask

those questions"; they agreed that there were two kinds of

questions, factual and reflective, with the former providing

students with the background on which to reflect. As Ed commented:

"That's right. You can't work in a vaccuum." This "commonality of

understanding" led to a concerted effort to utilize "thinking

books" and "reflection journals" as records for progress in

student learning.

Some of these "stories" enabled team members to reflect on,

and articulate, a similar kind of experience that "knit a kind of

continuity and unity" (Connelly & Clandinin,1988,p.153) within the

group. The occasion was during the third meeting in early March

when the use of "teacher" reflective journals was surfacing as a

dilemma for some team members. The "commonality of understanding

of praxis" was that teachers modelled for students the behaviours

and skills expected. Certainly, each member of the team welcomed

the opportunity to engage in group discussion of their reflections

on action; however, it was a different matter when it came to

writing a "log" of their reflections throughout the development of the Winter Studies Program. The team acknowledged that the Ministry of Education supported "teachers as researchers" and valued self-reflection for the improvement of praxis.

> Researcher: I think that's a real issue, a real issue when they're saying teachers need to use these [reflective journals].I think it's really difficult to do.
> Ed: I don't object to doing it. It's just getting to it.
> Patricia: It's making it happen, as part of your routine. That's the awkward thing. But once it's set in there somewhere
> Mike: Yeah. It's interesting. I've got a mindset that I hate wearing watches. I don't wear a watch because everyone expects you to know the time and where you are. The same as books, carrying a book around.
> Ed: But if you have any aspirations to be a writer, this is a good thing. That's why I am going to force myself to do it. You just write. If you are going to be a writer then you have to write.
> Patricia: Yeah, you write.
> Ed: If you are going to be a reflector, you've got to do it.
> Neil: We tend to be very active people and this reflecting, as in journalism, it is a very sedentary thing. So we very often don't take the time to do it.

Bill conceded that while on a New Zealand teaching exchange, a number of years earlier, he had "kept a daily everyday, all year" and prior to that experience he had perceived the exercise to be "something a girl might do at home in their personal diary".

> Ed: Oh, oh.
> Bill: and I'm sorry.
> Patricia: That's quite true. Don't apologize for it.
> Ed: Did you keep a record?
> Bill: Yeah. I filled it.
> Patricia: I filled two binders when I was in Denmark
> Neil: You think *that's* dedication to writing a reflection journal! It's at 11pm at night [the teacher dyad trial run campout] and we've just finished steak bernaise and our dinner and a bottle of wine and he's writing in his journal
> Mike: ALRIGHT!
> Ed: The funny scrawls is where he fell asleep.
> [collective laughter]

> Mike: Another guy did the same thing in a winter campout. I think his name was Robert Perry. See, things are beginning to look up.
> [collective laughter]

An ethos of camaraderie filled the room; the team of intermediate teachers was *becoming* a professional support group in which they displayed respect for, and acceptance of, each other. Within this, an energy to piggyback off one another's ideas and generate links to praxis pervaded:

> Researcher: You know that's key though, that's key when you're sailing, that's key when you're diving. You have to keep a log.
> Mike: Oh yeah!
> Researcher: That would be key if you were touring, backpacking, mountain climbing, because that's your log.
> Ed: We did that last summer in Hawaii so we would have a record. Notes from every day.
> Neil: You know, in history, those were a matter of survival, keeping those.
> Patricia: Well, they then, if those people didn't survive that's part of the way they understood what scurvy was, was through those journals of those symptons that were reported down and tying together what it was they were eating, what it was they were lacking.

Reflective journals as tools for reflecting on learning were advocated for both students and teachers. The "theory for use" was grounded in Mike's opinion: "I think one of our big objectives in this whole process of schooling is to get the kids to think about what they're learning so that it extends beyond". Their implementation as part of praxis proved to be more difficult; it is addressed as one of the topics of concern during chapter six, in consideration of the retrospection-prospection cycle of action research.

One of the most interesting vignettes served as a

foreshadowing feature for the planning of program change in the process of "action research"; it reappeared several times throughout the last four meetings, reinforcing conceptual change for the improvement of the Winter Studies Program. Its consideration was driven by the organizational constraints within the school which limited the kinds of meaningful experiences available for both teachers and students:

> Mike: The reason, here's why I did that, because I thought
> we would incorporate those guys into, this is
> where we got to have a residential camp to go to
> because at nighttime, folks, we've got the
> campfire here. Can you see it? I'm going to give
> you the great guided imagery: "There are strange
> things done"...we're at the edge of the lake, we
> can see it all. I mean that's what
> Neil: I can look up at the stars...
> Mike: That's exactly it.
> Neil: Way to go.
> Mike: So you integrate it all.

The "vision" of a residential winter camp within which to implement a Winter Studies Program energized the team; *when* to activate the plan became the debate.

Tension

Within a context of "collaborative articulation", in which there is respect and trust between members of the team, there is opportunity for the expression of "alternative mind frames (that) can lead to very different perspectives on what is happening, on the data that are collected, and on the framing of questions" (Tobin,1992,p.109). Throughout this study there were occasions when teachers engaged in deliberation for consensus in decision-making during which "tension" or "anxiety" as a feature of the

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"mismatch of perspectives" surfaced (Connelly & Clandinin,1988).

This was apparent in the "debate" on planning for future

implementation of the Winter Studies Program during meeting five,

reflecting on the design and implementation of the Winter Studies

Program. The question raised was: "What if we did it every other

year...and in the interim years we did something else?"

> Patricia: I think that that would be really wonderful to
> be able to put alot of time and energy into the
> Mimi.

With the perspective raised that the grade 6 students would have

already experienced "Winter Studies" there was support for

"alternate year planning". Bill voiced doubt:"I think that's a

good idea but then I think you lose alot of momentum and bringing

new people in which would be the case ..." This opinion was

countered by Mike's perspective: "Someone else might come in and

have a really good idea." Tony, as administrator, supported a

"rolling three year plan...so we don't overload ourselves"; he was

the "temperature gauge" for "preventative overload".

> Patricia: Certainly it allows us to plan, put our energies
> into different parts of the year because this was
> a biggy, and I'm personally, all worn out. Like
> I don't have a desire to take kids on a road trip
> somewhere this year. I really don't. I'm bushed.
> Ed: I have a counter proposal but its
> Patricia: We send *them* on the road?
> [collective laughter]
> Ed: No this is serious. Maybe we should do this again
> next year just so that we will have done it twice in
> a row
> Patricia: Yes.
> Ed: and next year certainly will be different from this
> year
> Patricia: Yes. I think that's a good idea.
> Ed: and then go into the alternate year thing.

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> Patricia: Yes. I think that's a good idea because I think
> we've got bugs that I certainly would like to iron
> out and work with
> Mike: Yes, the same here.
> Neil: The other thing to think about for next year is that
> it will be our second time around and we'll have
> ironed out alot of bugs...

Negotiation for mutual consensus transpired. What was interesting during this transaction is that humor surfaced at a point when tension seemed to peak; it appeared to function as a device for tension relief.

A similar occasion in which humor characterized tension relief was during meeting one, a time when the team was designing the Winter Studies Program; that is, planning the "body" for the resources, meaningful experiences, and learning outcomes of the curriculum. The teachers were searching for a "label" for the student self-directed learning contracts:

> Tony: What do we call it? Let's call it a
> Mike: A vision. What's your challenge?
> Tony: It's a work week. It's a
> Mike: What's your challenge?
> Neil: Their personal challenge?
> Mike: What's your goal?...What goal have you identified?
> The specific achievement you want to make? An
> achievement that moves closer toward your vision
> "I can see myself on Silver Star...in a ...snow cave"
> A challenge setting.
> Tony: What do you call that? What do you call that? We
> need a buzz word name for that two week period.
> Mike: A rigorous test of your new skills.
> Tony: Ah. What do you call it because its got to be a
> Patricia: Reality therapy!
> [collective laughter]

The struggle to name the self-directed learning experience had created frustration - tension; humor served the purpose of relieving it. Within a few minutes the team reached agreement and called it, "Personal Challenge". This "label" was significant; not

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only did it "drive" the design of the Winter Studies Program, but had the potential to impact the lives of all participants: "What is '*My* Personal Challenge'?"

> Researcher Memo
> Laughter or humor appears as a strategy
> for relief from tension in discourse. It
> serves as a moment of respite, to stand
> back and see the "big picture", to change
> direction, or to get back on track.

Tension in discourse was symptomatic of stress, "a personal struggle for those involved in the change process in continually having to confront their own ideas and actions and deal with the self-doubt to which this gives rise" (Reeves,1991,p.19). During early March the team met a third time to discuss the topic of student assessment in science. This led to consideration of the "Shared Perceptions" form displayed in the research article, "The importance of reflection in improving science teaching and learning" (White & al,1991). Each item on the questionnaire was adaptable to the Winter Studies Program; item "F" was contested.

> Patricia: I don't want "F" on there. I don't really see
> the point, "How much do you like your teacher?"
> I don't really see the point.

Mike articulated an alternative mind frame: "I think what they're really looking at is...'Does liking your teacher give you a more increase in liking science?'"

> Patricia: Yeah. I don't see
> Bill: Not at this grade level. I think grade 4/5 you can
> ask that question and get quite a different, expect
> a different response.
> Patricia: Listen. Listen. This is the grade eight. But
> Mike: How about, how about...How about a question of gender
> here?

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Patricia: We also have five teachers here. We've got five
                      teachers doing it, so saying, "How much do you
                      like your teacher..."
               Mike: "As a girl, did you feel your teacher gave you as
                      many opportunities to participate, ah, in activities
                      as they did boys?"

Mike successfully changed the direction of the discourse by

interjecting a "new" idea. The concept of gender equity was well-

received: Patricia agreed that "it would be an interesting thing

to ask" and Neil commented on the link with the school community:

"Well yeah, and we're right in the middle of that other program,

you know, that mother-daughter choices program". This process of

negotiation resulted in the creation of the "Student Evaluation of

the Program" form which incorporated questions to reflect gender

equity and items adapted from "Shared Perceptions" (Appendix C).

        The negotiation of meeting times often exemplified tension.

To coordinate teacher timetables was not always easy. While

teachers desired the opportunity to have time to meet during

school time to plan and reflect on the development of curriculum,

at the same time it represented "time away from the classroom",

the dilemma of the theory of "designing the curriculum" infringing

on the praxis of "implementing the curriculum". From an ecological

perspective, it mirrored "the tension in any organism to grow and

develop, and at the same time to remain in a state of homeostatis"

(Chrispeels,1992,p.6). Through deliberation in shared decision-

making and respect for individual differences, consensus in

establishing meeting times was reached.

            Tony: We'll leave a choice on it. Let's meet for sure
                  at 1 o'clock on February 1st so that we can get
                  on call teachers for that day. If we individually

Tony: choose to take then, the morning time ourselves
              to stay at home to read those [research articles]
              or we could choose to read at home at other times
              that fit in for us [as an honorarium] but making
              sure we read to reflect.

In responding to Research Question One, the dynamic features

of teacher discourse that characterized teacher interactions with

colleagues were commonality of understanding of praxis, narratives

of experience, and tension. The question remains: What features of

teacher discourse characterize teacher interactions with

curriculum content?

A focus on "how" the team of teachers developed the Winter

Studies Program and its curriculum content follows.

A Professional Support Group

How did teachers develop the Winter Studies Program? For the

success of any long-term implementation of innovation, the

formation and management of a professional support group is

imperative (Johnson et al,1984,p.58). In essence, the team

meetings for collaboration in designing, implementing, and

evaluating a Winter Studies Program created the opportunity for

the establishment of such a group. Members of the team functioned

"jointly and continuously" to: encourage competence in using new

learning and assessing strategies; provide a forum for sharing

what was working and for problem-solving what wasn't; access

teacher talents, skills, and knowledge as part of professional

sharing in the learning process; and, emulate "camaraderie" and

celebrate achievements.

A professional support group is maintained through "goal interdependence", "negotiation of mutual responsibilities", and through "clear procedures" and "active participation".

Goal Interdependence

From the initial agreement of all team members to participate in the development of a new curriculum there was goal interdependence in the commitment to design, implement, reflect and evaluate the Winter Studies Program. Each member of the teacher team depended on one another to assume mutual responsibility for its success: after all, there were 120 students that would be rotated through each of the four core curriculum content areas. It was expected that each teacher chose an area of study they enjoyed that would integrate with a Winter Studies theme: fine art experiences relevant to the north, winter survival, nature in winter, and a unit on snow, water, and ice. The goal of the program was to provide students with a number of meaningful learning experiences in each of the four core content areas as "prior knowledge" for their design of a "Personal Challenge", a self-directed learning contract. All experiences were to be represented in formats of their choice, and displayed to the community in the school gymnasium as an informal evaluation of their learning. "Celebration" of their achievement was planned to follow with a number of out-of-school winter activities.

To achieve their goal the team interacted collaboratively to generate ideas for the development of the program. "Brainstorming" was a useful strategy of praxis:

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Tony: Okay, our next task, you guys, is laying out...
              learning outcomes...Now, are we going to brainstorm
              and just sort of toss out for each of our things and
              I'll get them down or how do you want to do this?
              And you guys, I think what we need to do is get
              lots of fluency, lots of things down and then decide
          Ed: All work at each.
        Tony: Yeah.
          Ed: That's the way to get maximum brain power.

Teachers produced a collection of information - a "bank of

resources" of personal experience, community links, praxis, and

audiovisual materials. Tony commented, "So this will lead into

learning experiences that we are going to do. Right? So when we're

brainstorming, we're going to lead into the second part of actual

student experiences we are going to provide".

        Neil: We are working on the theory and then the
              activity. We may want to reverse it.

        For the teachers, the most practical approach to formulating

the student learning outcomes was from "praxis to *theory*". The

administrator facilitated the process by bringing the group back

to the goal at hand: "What do you guys want to see when you walk

out of here most? What are the top three that you want those kids

to walk out with, in terms of having experience?" Articulating

the learning outcome, the *theory* ,to match the experience, the

praxis, required team effort:

        Tony: The word was "demonstrate progress in"...
     Patricia: in either crosscountry or downhill
   Researcher: in acquiring skills? in acquiring skills?
     Patricia: crosscountry skills...downhill or crosscountry skills
   Researcher: skills and attitudes. That's really the key.
        Mike: Yeah. I'll say.
        Tony: skills and positive attitudes?
     Patricia: skills and knowledge
        Tony: skills, knowledge, and attitudes
        Neil: The whole three. That's fine.
     Patricia: S   K   A . Now there's another kind of useful
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>   Mike: Actually, knowledge, skills, and attitudes.
> Patricia: But it doesn't spell anything then.
>   [collective laughter]

For each of the four core curriculum content units of study three
learning outcomes were created. These outcomes, the *theory*, were
the skeleton on which to layer the "praxis", meaningful learning
experiences.

Through goal interdependence the members of the team were
able to design the curriculum for the Winter Studies Program.

Negotiation of Mutual Responsibilities

To display goal interdependence is to mirror the negotiation
of mutual responsibilities. In a collaborative context they are
interwoven.

>   Bill: One thing I'd like to get out of this group for
>   for my own benefit would be, collaborate with
>   somebody to share various ways of assessment with
>   a person. We can practise together different means
>   of assessment. I'd like to share that, if I try
>   something new I'll ask you to come in and view it
>   and vice-versa. I'd really like to do that.
>   Neil: That's part of the whole process.

The timetabling of student learning experiences necessitated
negotiation for manageable teacher responsibilities. Flexibility
was key; the component of self-directed learning contracts had
created "unpredictability" in the number of students who would
choose one of the core units in which to develop their "Personal
Challenge".

> Patricia: ...will that work for you Neil, because you've
>   got so much experience and give
>   Neil: Well, okay, why don't we just take our groups,
>   we'll break them up as to how we think they
>   should be going and see where we end up within
>   our groups and each of us will check on the
>   original contacts...and we'll make sure they're

> Neil: in the right place...now you may have some other
>   kids who are doing an overnight trip and tracking
>   ...so we can get together on that if you want.
> Bill: _____are going to be camping out...photographing
>   the deer...So that is your baby. I'll send them
>   to you. That's a natural.

Adaptability to change characterized the negotiation of time for fulfilling mutual responsibilities. When Ed commented, "I was going to do Winter Studies this afternoon but with my own class" with the purpose of "catch-up", Neil responded, "No. We're in our groups now. We're getting ready for our challenge." Ed adjusted his plans to "fit" with the team.

> Mike: You're not planning on taking your nature group out?
> Ed: It depends on whether there's enough wanting to be
>   involved on the major project which I was talking
>   about.

As change in teacher interaction shifted from developing skills of teacher praxis in isolation of others [the nature of the "closed" classroom concept] to collaborative work with peers, this ordained an additional "set of skills" of "how to" interact and cooperate with other staff (Reeves,1991,p.19). Certainly, flexibility and adaptability to change were skills that enabled the process of negotiation in collaborative discourse.

Clear Procedures and Active Participation

Support for professional groups is key to their maintenance and success. "Forming teacher professional support groups...begins with the supervisor or principal announcing support for teachers" (Johnson et al,1984,p.62). From the initial conception of the Winter Studies Program there had been administrative support. Mike commented, "...we talked about it last year and this year we

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actually were able to do it".

> "Procedures must be clear-cut to avoid the
> degeneration of the meetings either into gripe
> sessions with destructive criticism of each other,
> or amateur therapy and sensitivity training at the
> other end of the spectrum" (Johnson et al,1984,p.59).

Crucial to the first meeting was the role of the researcher
in structuring an "agenda" as a guideline to direct discourse;
research articles were presented for discussion as the "theory"
for incorporating strategies into teacher "praxis" for the
development of the new curriculum. Agendas for following meetings
were negotiated:

> Researcher: Finally wrapping it up, thinking about a next
> meeting date and any business that you people
> have to talk about regarding finalities to the
> program. Okay, does that seem workable then?
> Neil: Yeah. Yeah.
> Researcher: Great.
> Bill: I would like to go over some of the changes that
> we are going to accomplish for next year.
> Researcher: Yes. I would actually like to set up the changes,
> that's the whole focus and actually doing some
> planning, if you don't mind planning...

Active participation in discourse during team meetings was
inevitable; it was bound to goal interdependence and the
negotiation of mutual responsibilities. "Within professional
support groups there must be frequent, continuous, increasingly
concrete and precise talk...Through such discussion members build
a concrete, precise, and coherent shared language...exchange
successful procedures and materials...focus on solving specific
problems" (Johnson et al,1984,p.59). The creation of assessment
tools, in particular the "Teacher/Student Evaluation of
Performance: A Progression of Competence" (Appendix D), required

extensive deliberation in their conception, and problem solving

for their application:

> Mike: And I want...because it really does bring us to
> a team approach and it brings the kids into that
> whole team concept as well, and not responsible
> just to one person but responsible to four or
> five people...you may only have to see 20% of the
> kids on a real, head to head, tete for tete
>
> Bill: So we are going one (evaluation form) for all
> (units) or four for the four separate ones?
>
> Patricia: So I would put it on four separate colors.
>
> Neil: Then if someone has a problem with an area you
> didn't teach, then we should go and talk to them.
>
> Patricia: That's right. So you [Ed] get all the green sheets,
> you [Bill] get all the blue sheets, you [Neil] get
> all the yellow sheets, you [Mike] get all the pink
> sheets. That will be that.
>
> Bill: Beautiful. You just problemsolved a whole pile off
> my mind.

Group collegiality for problemsolving was possible within a

"climate" of mutual support; trust, respect, caring, and clarity

in communication were four conditions of "collegial relationships"

(Hansby,1992) that supported teachers in the development of

programs in change.

The Climate

As a member of a team involved in collaborative action

research, each teacher was a "stakeholder in the decision-making

process"; each had an opportunity through articulation to present

to the group their particular perspective, observations and

interpretations of their experiences, both personal and

pedagogical. This quality helped maintain a climate in which

teacher self-esteem was preserved, and in some cases, enhanced

through "trust, sensitivity to one another's feelings, and mutual

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respect in and out of team meetings" (Tobin,1992,p.111). An occasion that exemplifies clearly this quality occurred during team meeting four at the end of March; it was the "reflecting back on the program" phase of the action research cycle; it was attaching "value" to the collaborative process".

> Researcher: ...no, I'd rather work with teachers than by myself any day because the energy that has come, the ideas that have come from this group are phenomenal!
>
> Patricia: Yeah.
>
> Neil: Yeah.
>
> Mike: Me too. I found that when you get the chance hear what other people are saying, they bring another perspective, one that you haven't thought of, because you thought of all the ones yourself, you thought...
>
> Bob: You and I have been through this before, in the past, with the Open Area Schools.
>
> Mike: That's right. As soon as you get that opportunity it just builds you up, you learn more, you pass that on too, you get enthused about it, you pass it on and that's I think
>
> Neil: Once you get rolling, it almost eases the load.
>
> Patricia: Yeah. It helps to ease when it is frustrating for me. I know that very likely, you know, Ed may be frustrated too by the same thing and that helps. It's not that silent little box of a classroom where if it's going wrong, it's only because of me... You know how you always bring it onto yourself first and not maybe the actions of what you are doing.

Not only a pedagogical experience, it was a personal adventure in camaraderie. Humor, coffee, muffins and donuts tempered the "agenda of the day". It was not uncommon in the planning stage of the winter overnight camp experience for the teachers to relapse into whimsical dialogue and "poking fun". As Tony commented, "Oh, we *are* enjoying ourselves again!"

The benefits of the Professional Support Group to the

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professional development of the teachers affected "teacher morale": Together, the teachers experienced "a sense of accomplishment", liked each other, and created an ethos of camaraderie that impacted their professional lives (Johnson et al,1984,p.67). It was this structure that enabled the team to develop the Winter Studies Program, an innovative curriculum with content focused *in* and *about* the environment.

The Curriculum Content

The Centre for Educational Research and Innovation supports the development of "education for the environment" - a curriculum that principles the development of "environmental consciousness", the provision for "meaningful learning experiences", and the promotion of "personal dynamic qualities" such as independence, commitment, initiative, and responsibility (OECD,1991,p.12). What principles of Environmental Education emerged during the development of the Winter Studies Program?

As in the Environment and School Initiatives Project of 1986, the consideration of these three principles required "framing" within the context specific to this study. The development of "environmental consciousness", that is, awareness of the need to prevent and resolve environmental problems, has been reinterpreted as, within a context of Winter Studies curriculum, the state of consciousness of change. For teachers, students, and supporters this implies awareness of the need to, and conditions for, change.

Consciousness of Change

Metacognition is a term that encompasses three qualities: knowledge, awareness, and control (Baird,1992). For this study knowledge has been interpreted to mean knowledge of the value in "doing"; awareness as cognizant of the need to change; and control as planned action for the conditions of change.

Teacher Metacognition

In this research, which focuses primarily on the study of teacher discourse, teacher metacognition of change, both of a pedagogical and personal nature, emerged. This was possible through collaborative reflection within a process of systematic inquiry; that is, planned reflection for the purpose of understanding, and improving praxis.

Within this context of innovation for curriculum development the prerequisite attitude was a "willingness to change". Through a letter of consent each member of the team acknowledged their willingness and their "right to refuse to participate at any time" (Appendix A). However, "willingness to change" was challenged by the collaborative activities during team meetings. Ed, for one, was "metacognitive" of his learning style. When confronted with the idea of recording reflections in a log during team meetings he responded, "I have a great problem with that. I cannot listen to you and concentrate on what you are saying and do that too. That was a real problem for me at university. I have to do one or the other". His choice was to reflect and log at home.

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> Ed: You know what's bothering me? I see all of you
> people being much more flexible, adaptable than
> I am. Maybe it's because I'm that much older. I'm
> willing to do this stuff but boy, I need to see
> it "bing, bing bing, bing" [using hand to show a
> step-by-step linear layout of a plan]or otherwise
> I'm not just comfortable.

The practice of reflection journals by teachers was a contentious issue. There was "agreement of knowledge" that their use was worthwhile. But each member was aware of their personal biases or characteristics that constrained the action to record their reflections: too sedentary, difficult to find time, dislike of book handling. One teacher was forthright in sharing a logged reflection: "To be brutally honest, I lack the self-discipline to make entries daily, or even more frequently, according to events, and so I suppose the final value of such a record is greatly diminished".

> Neil: I think if you get locked into a certain format for
> writing it too, that can be a problem.
> Ed: Yes it can.
> Neil: But if you use it as a place to jot down ideas and
> notes and so on, you can at least go back later and
> make heads and tails of it, or reorganize it if you
> wish
> Ed: or expand on it.

Teacher knowledge about change, the awareness of the difficulty to change, coupled with the knowledge of value for change in recording reflections, led them to be in control of change through planning ways to circumvent the constraints. Mike suggested, "I would like to do it at the same time the kids are doing it because then I would get into a routine. If I get the kids into the routine, then I'm in the routine".

Ed: I think you get more if you make spontaneous
    entries too. You're more faithful to your thinking
    because when you do it later, you don't recall
    everything

Bill: and not in the same light. You read it in the same
    light as it was written at the same time when you
    do it right away.

As the teachers expressed "control of change" in the planned use

of their reflection journals for next year skepticism surfaced,

mirroring what Reeves (1991,p.19) states: "Moving to the new

necessitates a breaking up of past beliefs and values...and this

process is seldom painless".

Mike: I was brought up in an era where, I didn't have the
    opportunity to ever think about my learning or my
    thinking or why I was doing something. That was
    foreign and it is still basically foreign to me,
    to my persona because it's something I don't know.
    I don't see the value in it yet. Now I might say that
    I see it for kids but maybe I don't see it for me.

Still, the "willingness to change" characterized teacher

reflections as evident in Bill's insight: "...dealing from

comfort, you don't always expand your own vision, and I'm thinking

if we were able to rotate through these four different areas, I

know it would be awkward, I know it would be uncomfortable, but I

see the value in it".

Through collaborative, self-reflective inquiry teachers were

able to identify the "needs" for planned change in the succeeding

years of implementation for the Winter Studies Program: more

effective use of student "thinking books", more direct instruction

for student reflection, more time for "hands on, experimental

work", coordinated planning for "new ways of assessing kids".

Neil: With a program like this it is easy to generalize
       how we assessed them, but getting down to the nitty
       gritty is difficult at times and that's one of the
       parts of the program we didn't prepare for...we
       could go back now to the curriculum guide to make
       statements about it, connect it all, but we don't
       want to do it afterwards but as we go, while we're
       in the program.

Consciousness of change encompassed, not just the

"pedagogical" domain, but the personal as well. Bill mirrored this

in his reflection: "I know for sure that I worked closely with Bob

and not only professionally grew, but I know that alot of bonding

occurred, that was natural, and I could see alot of that

happening with the kids, alot of bonding with the kids."

> There is a deep human need to collaborate and
> build personal relationships with supportive
> peers; it may be just as important among teachers
> as it is among students (Johnson et al,1984,p.71).

Student Metacognition

It was through the examination of teacher discourse that some

sense of student metacognition emerged. Background knowledge on

the "outdoors" was considerable. "Alot of these kids live on the

edge of the bush, so to speak, or on farms where wildlife is quite

abundant...as far as knowledge about the animals was concerned,

overall, the collective information in that class, in those

groups, was really an eyeopener". For some students, the Winter

Studies Program was a challenge for them to pursue their own

interests; for others, they needed "structure". Bill commented,

"One thing that wasn't lacking, though, was their basic knowledge

that they came with and a fair amount of enthusiasm for it which I

found helpful."

The Winter Studies Fair, a kind of "Rites of Passage" - a
presentation of their experiences in formats of their choice - was
an opportunity for teachers to informally evaluate student
learning: "What is it that you've done?"; "How did you learn how
to do things?"; "What is the most important thing you found out?".
Students were informed; they shared their knowledge of the
learning they valued through models, reconstruction of lean-tos,
data displays, videotapes, charts, interviews.

> "I learned that it's really fun and that
> it's easier for me when you enjoy yourself.
>
> "I got cold, I got wet...alot of people knew
> what they were doing but I didn't."
>
> What was the hardest thing to do?
> "...trying to keep track of the tracks."
>
> What was the most difficult part?
> "the darkness"

Awareness of their need to change and control of change in their
contemplation of action was evident:

> What would you do differently?
> "I'd bring more extra clothing."
>
> Next time is there anything you would change?
> "I'd become more prepared."

Even though some students did not voice a "willingness to
change", their reflections showed otherwise.

> Patricia: ...Even if they didn't like it when they talked,
>   even if they didn't ultimately enjoy it like Sue,
>   in our class, you know, going in the woods and
>   being dirty and stuff
>   Mike: No, she hated it! She didn't want to do that
> Patricia: But she still could talk about it and you really
>   learned alot from her and even though ultimately
>   she hadn't enjoyed it, she was still very
>   reflective.

That students were conscious of their needs and were able to create the conditions to satisfy them was observed by Neil: "What I found was more kids were self-motivated...and came and asked questions about the problems they had and when I put it back on them they could come up with the ideas. That is what was important to me."

Being metacognitive of one's own learning also had a component of affective development: Tony mentioned that there had been "an attitude change...there seemed to be an 'upness' about the kids in terms of what they were doing". Teachers agreed that a change in attitude was not just about "the program" but also reflective of changes in "self" and in one's approach to learning. Students valued that "learning can be fun".

> Patricia: I asked if they would go out and do that again...
> and generally they would. They would change a
> few things...but they are interested in going out
> and doing that kind of thing again, just for fun,
> and I thought, here we have *transference* , here
> we have a usefull skill, we have something we're
> offering initially here they're learning
> Ed: a life interest
> Patricia: and they're going out and saying, "I can do this.
> I will modify it this way. I will do this next time."

As with the teachers, the "collaborative" working together to solve problems and support one another "in change" was a key element of their experience.

> Would you go camping again?
>
> "Yeah, I would because it was fun. There were
> alot of people there. The Quay members knew
> alot, the teachers knew alot and everyone
> was helping each other out."

<u>Supporter Metacognition</u>

Both the researcher and the administrators provided support to the team in the conception, design, implementation, assessment and evaluation of the Winter Studies Program. Their roles will be presented at length in Chapter Five, Support to the Study. What evidence unfolded from teacher discourse that suggests that the supporters were metacognitive?

Tony, the principal, demonstrated critical self-reflective inquiry in the evalution of the Winter Studies Program; he articulated the strengths, difficulties, concerns, and suggestions for improvement. His knowledge of what had been accomplished in order to implement the program was evident: "...by grouping the 6s and 7s last year, when we talk about doing things together, in my mind, that's a really big success". He acknowledged that all students were able to interact with all of the five teachers and were able to experience the variety of activities. "I liked the things we tried." That Tony considered himself part of the team and accountable for its fruition surfaced in his self-critical stance, his awareness of a need to change:

> I wasn't totally comfortable with how my
> involvement tapered off, just for the
> workload from my end of it, so I would
> have to look at my involvement, the things
> I'd like to do with this. It was good for
> the first two weeks...it would have been
> nice to see the growth that you guys...
> the growth in front of the kids maybe in
> the 4th and 5th weeks.

When the team responded with suggestions for more involvement in

"an administrative capacity in the home, updating parents" Tony

was attentive. His active participation in teacher discourse

displayed reflective inquiry: "How do we go about changing what we

do on our school, in our classes, so that science becomes more up

front and centre and automatic...what can we do?" Continually

making the links between *theory* and praxis for the team, Tony was

metacognitive of his role as facilitator for curriculum

development and change within the school.

For the researcher, knowledge of the value of action research

in working collaboratively with teachers was revealed during the

third meeting when team members were reflecting on the success of

the Winter Studies Fair:

> ...I have to really tell you. If I have gained
> anything this year, it's working with you people
> in the Winter Studies Program. I have changed my
> whole perspective on how I like to work. Before
> I used to work by myself...I've come to realize
> I much prefer working, whether it's with this group
> or not, and I'm sure it is...with teachers.

Awareness of the need to change was memoed after review of the

fifth team meeting:

> As a facilitator, effective communication is
> ensured through being succinct in expressing
> ideas and reducing redundancy in the attempt
> to convey an "AHA" message. I tended to be
> very wordy at times, which seemed to affect
> the tone/climate of the room, such that the
> initial momentum after recess was lowered by
> passive engagement through researcher preambling.
> Soliciting questions engages and increases
> group dynamics.

This reflection evokes consideration of the possible "tension"

that may exist in the dilemma of trying to balance roles: the role

of facilitator versus the role of colleague in action research

sharing one's "mind frames" and reflections on topics. One memo

expressed the conditions for change for the researcher: to

"actively interact with teachers and not get caught up in the

administrative components, the methodological delivery, of an

inquiry...to 'step back' and remember to facilitate through

watching and guiding and to be 'intuitive' of the 'signs' of

teacher weariness through collaborative reflection":

> This brings to mind the research of Hargreaves
> (1989) who cautioned about "contrived collegiality".
> That "push for a little more" may prove harmful
> to future meeting rapport.

Meaningful Learning Experiences

Curriculum content, as conceptualized for the development of

student learning experiences in the Winter Studies Program,

implied concepts ("knowledge"), values ("attitudes"), and skills.

"Student learning experiences", coined by Ralph Tyler as an

experience involving "the interaction of the student and his

environment", inferred that students would be "active"

participants (Connelly & Clandinin,1988,p.141).

One goal of the Winter Studies Project was to guide students

in *becoming* "strategic learners"; that is, students who would

display skills in problemsolving, decision-making, assessing and

evaluating information, and who would develop an ability to use a

variety of strategies to represent, and reflect on, their learning

(Marzano et al,1988). To promote the necessary attitudes and

skills teachers would need to model for their students such a

"repertoire" of abilities. The multi-dimensional role of the teacher was obvious: manager, expert, and facilitator. In the implementation of the Winter Studies Program the teachers had to function at all three levels: coordinating activities and monitoring student learning, presenting and assessing cognitive skills and processes for "active learning", and serving as a guide in helping students actualize their challenge through the understanding and interpretation of the environment. It is the latter role that maintained a high profile throughout the development of the curriculum project for it was in its conception and implementation that it became an innovation to classroom curriculum.

"Meaningful learning experiences" in curriculum for Environmental Education encompass three approaches to learning: one, learning *about* the environment; two, learning *in* the environment; and three, learning *for* the environment (Robottom,1987).

In the development of the Winter Studies Program "learning *about* the environment" was a component of the curriculum. That four content areas were presented to students primarily within a classroom setting in a teacher-directed format, mirrors "traditional" teacher praxis. Where it displayed signs of transitional praxis for transformation was in its *interdisciplinary* content: literature, nature, survival, and properties of water/snow/ice.

>   Neil: Just as an aside about the literature aspects of
>   this whole thing, it's really, really important...
>   it gave them an avenue to express their emotions
>   and feelings about it. It's an essential.
> Researcher: Actually I think your link could be an appreciation
>   of literature as an avenue to understand the beauty
>   of nature.
>   Ed: and to express
> Researcher: yes, and to express it. Yes.
>   Patricia: Actually, you know, one of the things we did when we
>   had your kids and you were doing crosscountry skiing
>   was, we watched the film about avalanches and I had
>   the kids write poetry. Now there was a true science
>   component to that but the poetry that they came up
>   with because of their gained understanding of the
>   scientific phenomena of avalanches was really good,
>   very powerful writing. Something I would do again.

Neil planned to extend this experience to all areas of the curriculum for Winter Studies: Students need "to start to express those kinds of strategies rather than just writing in their (reflection) journals".

The intent of the "core curriculum" was to be active and inquiry-based. But as Neil commented, "You wanted to get kids out of the classroom to do something ("hands on, experimental work") but there just wasn't the opportunity". Everyone agreed that "time" restricted the scope of the experiences which, for the core curriculum, spanned four weeks - each class rotating through a different core curriculum unit per week.

>   Ed: What I had originally intended...was that we would
>   go out with Paul Winstone to...(the crosscountry
>   ski trails) and we would do an animal census - the
>   whole group - and it was intended to be once each
>   week but it didn't work out...

To adapt to the change in plans since the guide was not available Ed had the small groups of students draw "a story with tracks...showing encounters...with animals...they were likely to

encounter in the wild." Some students were motivated to observe, record, and track encounters *in* the environment.

The community functioned as a resource base, a wealth of expertise. Of Paul Winstone, Neil spoke highly: "He provides a balance,,,he hunts, he traps, and he's also a conservationist." The guest speakers "gave alot of background knowledge" and the students were "fascintated listening to them". One teacher commented: "They (students) asked incredible questions." What was rewarding to learn was the transfer, that students "talked about it at home" and "had to go through and talk to one another about some of those issues" such as trapping.

Learning *in* the environment represented a step closer to a more innovative curriculum in that learning extended beyond the classroom walls. Still, the teacher functioned as the organizer of "authentic" learning experiences for student understanding and interpretation of their "interaction with" the environment. Such experiences entailed crosscountry/downhill skiing, snowshoeing, and a variety of winter survival skills such as shovel shearing, building a quincy, and making a fire.

> What is the most important thing you found out?
> "How to survive in the wilderness."

Where the curriculum began to transform was with the introduction of the self-directed learning contracts. They represented opportunities for students to become active inquirers of knowledge, to problemsolve in a collaborative group, to direct their own learning with teacher support, and to reflect on their

experience of their "Personal Challenge".

> Mike: Within the self-directed learning contract the
> kids stated the problem...defined their control,
> their parameters...they recognized that they ran
> into problems and had to adapt because there
> wasn't enough snow. They had to change their
> hypothesis.

The students "liked the fact that they got to set their challenge and plan and follow-through". Neil asserted, "They had a vested interest. They had input." He articulated the long term benefits of the self-directed learning component in the curriculum:

> Again we have to take a look at the whole idea
> that we're process oriented rather than product
> oriented.(If) We're giving them those kinds of skills
> and strategies that will allow them to go and find
> out about certain things to gain those concepts
> they couldn't do before, then I think we're doing
> our job quite well and I think that this program
> did that for alot of those kids...

What was significant, Neil believed, was that "they will now be able to go on and do things for themselves as independent learners". The curriculum was emerging as a curriculum of learning *for* the environment.

Throughout the Winter Studies Program, whether learning encompassed *about*, *in*, or *for* the environment, there was the provision of "options" to meet the variety of student needs and interests. This reflected a transition from teacher-directed to student-centered curriculum. As Patricia observed, "That interest was there. It may not be to be out overnight, but there was an interest there to at least experience, in some form to some degree." Spoken with brevity: "Interest drives learning."

One of the most important learning experiences throughout all

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phases of the curriculum was the use of "reflection journals" and "thinking books". Everyone on the team agreed that their use was essential for developing independent learner skills. For some, student reflections "linked with what they went through, with what they got out of it (the program), and how they could apply it to real life". Teachers felt that, overall, they had been "poorly done", that "alittle more direct teaching" was needed. Neil reflected: It's a growth process. It's really the beginning of something the kids will, particularly the 6s, with another year, which is great, will start getting used to."

A curriculum for environmental education embodies an ideology of "education *for* the environment"; informed collaborative action involves the transformation of conditions for change to sustain "the environment". In reflecting on the "conditions" necessary for the Winter Studies Program to develop, it could be said that the teachers collaboratively developed a curriculum that improved on "the quality of students' curricular experiences" (Elliott,1992,p.30). This they achieved through support from the researcher, administrators, and community: funds, timetable and reporting timeline adjustments, community resources, and parent support. Their ability to assume a critical self-reflective stance for planned change in program development and teacher praxis was fundamental. Their "willingness to change" and "actively participate" in collaborative inquiry was essential.

> Neil: But what happens now? What do they do with it?
> Will they challenge themselves on their own?..

> Neil: But can they apply the same problemsolving, ah,
> strategies to other situations, to highschool..?

Personal Dynamic Qualities

The OECD purports that Environmental Education promotes the development of personal "dynamic" qualities such as commitment, responsibility, initiative, and independence as prerequisite for coping with global change. What qualities emerged from the development of curriculum for the Winter Studies Program?

Teacher Dynamic Qualities

During the presentation of The Professional Support Group, earlier in this chapter, personal dynamic qualities for teachers working in collaborative action research emerged. To display goal interdependence required "commitment" to the program; to negotiate mutual responsibilities implied assuming responsibility for planned action implementation; to actively participate signified "taking the initiative" to reflect and plan for change. Teachers were reflective on their praxis:

> Ed: My section next year...will be wildlife and winter,
> not nature in winter because the kids are very
> interested in the animals and not very interested in
> the plantlife and that type of thing.

> Mike: (What)I'd like to see us do...maybe give them a starter
> ...once the've got that a few times they get an idea of
> what it is we're looking for in terms of their journals.
> Neil: Yeah, yeah. I think they should have private sections in
> their journals, two places where they can write things
> that we don't read.

> Bill: It's a simple organizational thing like that that makes
> such a big difference.

Adaptability was an essential quality in developing curriculum and for interacting with others. When Ed was unable to

work singularly with his class one afternoon on Winter studies he rescheduled a "whole day" to be "caught up". All of the teachers displayed flexibility in developing the available resources.

> Mike: ...we've become more resourceful in being able to use the existing...and to go with it.
> Bill: I think we've become our own resources now
> Neil: more confident in using our own skills or each other's skills too
> Ed: I also became more comfortable doing something you are very comfortable with and I'm not, that is, arranging for resource people to come in.

Perhaps one of the fundamental attributes for critical inquiry was displaying problemsolving skills. Allocating time to "reflect" on praxis was an issue:

> Neil: There are times when you almost have to build it into the day.
> Patricia: If we want ourselves to do it and become ourselves self-directed learners, then do we not have to ask students to do the same thing and build it into the day, like when we sit them down to
> Ed: like Writers' Workshop?
> Patricia: Yes.
> Neil: like we write when they write.
> Patricia: Yeah. That is the time when we have to push something else aside and say "Sorry, that's not as important. I want you to get out your thinking books. It's time for mine out. I need to think about the day. You need to think about the day, and put that blasted thing away!"
> Neil: They can't come to your desk.
> Ed: That's right.

Throughout the course of the last three meetings the problem of *when* and *how* to reflect on action, and for action, surfaced. It was an issue that teachers wrestled with, and eventually resolved, in planning for program and teacher change.

Student Dynamic Qualities

When teachers were asked to brainstorm the key skills and

attitudes that they would envision students developing through participation in the Winter Studies Program, they generated: risktaker, enthusiastic, cooperative, critical thinker, conscientious, self-directed, and "stick-to-it-ness". What qualities could be teased out from teacher discourse?

Assertiveness required the ability to take risks. As students engaged more actively in classroom discussion they began "to understand that the doors open to them". Mike observed, "That whole group is trying, trying to be more assertive. They're realizing that they have to be because they don't get to have a word edgewise if they don't."

Problem solving and adaptability were interwoven qualities. Mike spoke of the students who were unable to actualize what they had intended for their "Personal Challenge": "What's the alternate activity you can think of?" Students generated ideas and fulfilled their contract.

> Neil: That happened with the water, snow and ice kids when the idea just couldn't be handled and (they) ended up going together, because they were on the same topic, and they worked really well as a group.

It seemed that the students who "were able to adapt and to change their thinking, were the ones that did better than the ones who weren't able". Neil attributed this to students thinking about, reflecting on, "the suggestions made about things (that they) could be doing" by their peers.

Positive comments voiced by teachers about individual students suggested that students formed cooperative groups,

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sharing in goal interdependence, such as fulfilling a small group

"Personal Challenge":

> "They were a very supportive group."

> "This really wonderful atmosphere...the cohesion
> within the group."

Actualizing their "Personal Challenge" was fulfilling a

commitment and assuming responsibility for the completion of the

self-directed learning contract. Those students in Ed's class who

assimilated the "story of the tracks" into an "*in* the environment"

experience, showed initiative. One of the community resource

people, a naturalist, was "quite impressed" with (their) tracks.

"She said, 'I think I'm going to try that myself.'"

Students were reflective. One teacher shared one entry in a

student reflective journal:

> ...When I face a long hill I'm scared at
> first, but after I get going on it, I am
> confident and remember instructions on
> technique. Something I noticed - I noticed
> that Alpine and Nordique are very different,
> but they certainly do have their similarities,
> like in Nordique we snowplow, sidestep - go
> downhill sometime and in Alpine we do too.

The winter overnight campout impacted student reflections. A

student wrote, "I learned not to put are wet clothes into are

sleeping bags or in are shos becaus 1. are wet clothes wonte dry

and 2. are wet clothes will drench are dry things. I also learnt

that a candil dos not dry wet clothes." The writer continued to

list a number of changes for "next time" and concluded, "I know

not to put your exceptment in your snow cave till <u>after</u> you poke

an air holl throw the ruf".

The self-directed learning contracts, the "Personal Challenge", necessitated students to become "active learners", encouraged them to become "action reseachers".

Both the researcher and the principal-administrator were committed to supporting the team in their development of curriculum for the Winter Studies Program. They were responsible in facilitating the team with funds for teacher release time and transportation to the outdoor sites. Both showed initiative in presenting to the "large" group (120 students) a dramatized introduction to the utilization of the KWLH strategy. While the researcher assumed responsibility for meeting agendas and their recording, the principal-administrator, when in attendance, facilitated discourse by raising issues of a *theory*-praxis nature, displaying active social inquiry:

> Where's that triangle where they talk about
> retention rates so that if you, if you tell
> somebody about it...then it's 10%, but when
> you actually teach it to someone as a skill
> ...so that maybe we build in those kinds of
> things as part of the quality performance.

The principal-administrator showed leadership in voicing "action" on reflection at the culmination of teacher discussion on the effectiveness of student teacher training programs: "Is there something we need to do in our respective groups and even as a district to get some messages like to OUC or so on...if...sensing that kids aren't prepared and we're putting them at risk and the system at risk maybe we need to think, should think about doing it

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somehow, to give feedback to them."

Sensitivity to the "climate" of The Professional Support Group was significant: Maintaining the flow of the discourse, particularly in the negotiation of meeting times, was insightful.

"Then let's set up something now."

He was aware of his need to gauge "how much" was being planned:

"We do not want to overload."

The principal-administrator was reflective in appreciating teacher ideas and in problemsolving concerns:

> That might be a good angle, you know, more
> parent involvement on that because when I
> think about that, I wonder what's our
> educational responsibility for a situation
> like that? Should we be pushing more to
> make the parent more accountable or the
> student more accountable? I don't know.

In contemplation of the personal dynamic qualities of the researcher, with regard to the earlier section on "Supporter Metacognition", the researcher was reflective. Further, by nature of the study of collaborative action research, the researcher was engaged in active social inquiry and endeavored to generate ideas to assist teachers in their problemsolving process.

Summary

In Chapter Four episodes of teacher discourse have been presented to illuminate the features which have been interpreted to characterize teacher interactions with colleagues and curriculum content. Three "dynamic" features of teacher discourse enable the reader to gain some understanding of how teachers

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develop collegial relationships for the establishment of a
Professional Support Group. Through teacher interactions of
discourse a *commonality of understanding of praxis* is shared.
Narratives of experience function to clarify the common bond of
teacher understanding, to link intercurricular knowledge, and to
reinforce anticipated change. *Tension* arising from the
articulation of alternative mind frames predicates the development
of negotiation of mutual responsibilities in shared decision-
making. It is the establishment of a Professional Support Group
that characterizes teacher interactions with curriculum content.
It is maintained through goal interdependence, negotiation of
mutual responsibilities, and through clear procedures and active
participation of group members. A climate of trust, respect,
caring, and clarity in communication created an ethos of
camaraderie that supported both professional and personal growth.

 During the development of the curriculum for the Winter
Studies Program three principles of environmental education
emerged: consciousness of change, meaningful learning experiences,
and personal "dynamic" qualities. The principle of "consciousness
of change" was evident through teacher, student, and supporter
metacognition. Meaningful learning experiences for students,
teachers, and supporters encompassed learning *about*, *in*, and *for*
the environment. Personal "dynamic" qualities, on analysis of
teacher discourse, were categorized as teacher, student, and
supporter.

Chapter Five

SUPPORT TO THE STUDY

> What we do is bring people together in a way
> that they establish and become supporters of
> the school mission. It is the management and
> support for that system that grows out of the
> dynamic interaction of people that then makes
> everything else possible (NCESRD,1989,p.13).

<u>Introduction</u>

In Chapter Three, the context for this case study was presented in light of the organizational structures, the community of learners, and environmental climates in existence at the time of the research inquiry. Together, they enabled teachers to access opportunities to engage collaboratively in the development of curriculum.

Chapter Five concentrates on the support system that was crucial for "collaborative action research" for teachers in the development of the Winter Studies Program. Through the analysis of teacher discourse "a community of support", individual and institutional, emerged. The more prominent political, economic, and socio-cultural conditions that created opportunities for teachers and supporters to develop professionally, through the experience of change in the design and implementation of new curriculum, are presented. The organizational structures that may have supported students to "grow experientially" can only be suggested since the parameters of the research inquiry have been restricted to teacher discourse.

Research Question Two

What support, both individual and institutional,
facilitated professional and curriculum development
in action research?

A Community of Support

Ronald Edmonds, in discussion with John Ervin and James
Cromer in 1982, talked about institutional change as embarking on
the sharing of authority with representation by everyone in the
system. He likened the process of bringing members of a community
together for support to an "enterprise" as restoring "the kind of
consensus that existed in a natural way, in the pre-1940 school
when parents, teachers, and admininstrators met each other in the
A&P store...they knew each other enough to trust each other"
(NCESRD,1989,p.13).

Members of the "community" that provided support to the
Winter Studies Project have been categorized into individual and
institutional support. With regard to the former, the
administration (team of administrators) and the researcher were
influential in establishing the organizational structures for
support to curriculum change; it was the teachers that, through
collaboration, provided the most support to one another in change.
Institutional support was solicited from school district
personnel, the parent group, and community resources.

Individual Support

As was alluded to in Chapter Four, both the adminstrative

team and researcher shared similar goals in their commitment to ensure teacher collaboration for the development of curriculum for the Winter Studies Program. Through an "unspoken" negotiation of mutual responsibilities the researcher supplied the economic resources for teacher team meetings; at least one, or both members of the administrative team, was in attendance in a supporting role for each of the seven meetings. The administrators and researcher actively participated in group discussion and had conceptualized "agendas" as clear procedures to follow during each meeting. Each assumed a supervisory role parallel to what Marzano et al(1988,p.63) refer to as "supervising conversation"; "the analytic function of pointing out new ideas that the conversation has led to...ask(ing) salient questions that push (teachers) to consider apparent contradictions or new information...to bring a conversation back from brainstorming for focus on an original question".

An occasion to illustrate this role was the fifth team meeting held in mid-April, a post-Winter Studies Program reflection for the purpose of "planning for change". Teachers had been brainstorming the "needs" for providing learning experiences; the topic had shifted to the principal's association of active learning and quality performance. The researcher interjected:

> If we go back here then, can we just become *specific* in itemizing kinds of things that we want to see changing here...What other kinds of things are we seeing as teachers, like seeing maybe how we approached it this time and what is it that we consciously want to change when we look at it?

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A list of recommended changes followed. During this same meeting the principal demonstrated skill in this role. When the issue of "intercurricular links" with science was raised he queried, "How do we go about changing what we do in our school, in our classes, so that it becomes more up front, and centre, and automatic?" He visualized student performance mirroring teacher performance as students teaching students using a format likened to a teacher lesson plan: "...if we are going to ask them to demonstrate their knowledge somehow, that's the kind of rigour of thinking we have to get through, teaching to an objective..." His manner was forthright in returning the discussion to the topic of "needs":

> Time like this is critical, you know. Like after school time we've put our, we've shot our wad into our kids all day long. We put our energy into that. This is, this is I think a critical time, at least once a month, in the morning or something like that, where you get together, and we'll have to be creative with that next year. I think it's essential.

The provision for "time" proved to be the crucial determinant of collaborative interaction; it enabled teachers to leave their classrooms of isolation:

Researcher: ...Do you think we would have made as much progress if we hadn't been able to get the time together?
Neil: Nope.
Patricia: No way. No way we would have made the progress because it was too frustrating.

There were comments that the meetings kept teachers "focused", otherwise "we'd be too distracted". Neil expressed the "common understanding" about "teaching" as, "You know, when we're involved in so many things at school that are so time consuming and so

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on...we really need times that are specific here, to pin it down, and sit down and talk. We gotta do that". Consensus echoed about the room: "We definitely have to!"   "Oh yeah."

Both the researcher and the team of administrators functioned to support the teachers in the development of curriculum for the Winter Studies Program by facilitating teacher discourse during team meetings; as active participants in the process, they encouraged collegiality, "networking" for the exchange of information and strategies (Reeves,1991,p.29). Their supportive role as "facilitator" represented one dimension of their multi-faceted contribution to collaboration.

Contributions of the Researcher

The role of the researcher as an advocate for change was crucial in securing structures that could "mobilize the process", such as the securement of funds for team meetings, and the solicitation of administrative support for the procurement of physical locations that would enhance the group process. Reeves (1991,p.30) asserts:

> There is a need to mobilize groups and individuals
> to achieve change. There is a need to define short
> goals and ensure their achievement...to sustain
> motivation and involvement.

A meeting agenda (Appendix B) functioned to ensure that items of importance to the teachers, administration, and researcher were discussed. As well, the researcher operated as a "recorder and collector" of information: Video and audiotapes were assembled for data storage for future reference; fieldnotes authenticated

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"planned change"; timelines were charted for visual reference.

As a support to the process of change the researcher can be likened to the "advisory teacher" in England, a sort of "external change agent", *exclusive* of the team implementing change in the classrooms. Personal support, the clarification of ideas, and problemsolving (Reeves,1991,p.18) were a few of the "process functions". Through examination of the discourse, effective communication skills of paraphrasing(1), restating(2), questioning for clarification(3), and summarizing(4) surfaced:

1 Researcher: ...like Patricia just mentioned, like actually, Mike probably got a good feel for certain students by questions you just did now and
      Mike: Yeah.

2   Mike: As a girl, did you feel your teacher gave you as many opportunities to participate...
  Researcher: [recording in writing, thinking aloud] As a girl, do you feel you've had as many opportunities...

3   Mike: I didn't, but I could do it very easily.
  Researcher: You could do it. Like Patricia, did you make notes and then...?
   Patricia: I haven't written them on informal progress reports but on post-its...

4 Researcher: What I started putting down here looking under teacher change was that the idea that we need to start to practise small activities to lead up to more global activities to emphasize transfer...

As an advisory teacher, "outsider" status "provides a different point of perception...which can help staff to reframe issues and problems (Reeves,1991,p.29). Regarding the concern: "How do we challenge kids who create contracts that mirror experiences they have already completed previously?" The researcher reframed the issue for problemsolving:

> Isn't that something we have to start building
> into our system...what we need to teach kids is
> that, your framework of what you come from, once
> you have had that experience, now how do you extend
> that more so that each experience, even if it is
> repeated, is a learning experience?

In this case study the researcher attempted to implement systematic inquiry, the action research cycle, and in so doing, committed "to the essential coupling of *theory* with praxis" (Chisholm,1990,p.254). During the first three team meetings opportunities to articulate reflections on a number of research articles were presented to the teachers (Appendix E). Researcher interaction with teachers' discourse enabled several assessment tools to be compiled; consensus for the use of thinking books and reflective journals (diary-like) was voiced. Teacher flexibility to reflect on the research and incorporate it within praxis added credibility to the "action research" process - teachers as researchers. This commitment to link *theory* with praxis was also displayed through principal-administrator dialogue.

Contributions of the Administration

In this project the principal-administrator was instrumental in providing support for positive interdependence among colleagues in the group: His visibility at meetings, particularly in the initial team gatherings and for "planned change", and contributions to oral discourse provided momentum for teachers to consider innovative ideas in the planning of the curriculum. During the second team meeting there was considerable discussion on Baird's(1992) "Agreement for Change", questions for teacher and student change:

> Tony: We could modify that but if we were to get into
>   that self-reflective mode then the only people
>   that would see them here would be us...maybe
>   that is kind of an assessment and evaluation on
>   our teaching and each of us goes through...
> Neil: If it's not confidential and if they do put their
>   name on it, it would be interesting to relate it
>   to their learning style too, as the kind of responses
>   they have.

Throughout the implementation of the curriculum he often gave

"updates on new research" and volunteered to model strategies in

the classroom for teacher use.

> To be effective, a professional support group
> needs a variety of resources that only
> supervisors and principals can provide
> (Johnson et al,1984,p.66).

The principal-administrator was an effective communicator.

Concerning the issue of student thinking books and reflective

journals, in which their use had become confusing and redundant

for some teachers, he interjected: "There is a difference between

a log book of what you do and a field journal and your reflections

..." Thus, through concept clarification, teachers were able to

generate strategies of praxis to assist students in becoming

reflective in, and on, their learning.

The administration's perception of the parent community

priorities and the educational political climate helped direct

discourse to the matter of assessment: "We have to be clear on

what we are doing, how we're assessing it, and how we're

evaluating it because those questions about letter grades...are

going to come out of it so we have to be able to show student

growth and how it is measured." It appeared that the team of

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administrators reinforced anticipated change, for whenever

discourse focused on the topic of assessment, the underlying

district directive for "accountability" emerged in the

articulation of "criteria":

> Mike: ...it's really important to lay out a criteria,
> just as we did with saying, "Here's the baseline"
>
> The other thing I'd really like to do is have the
> kids know what they are going to be evaluated on.
> "What's the criteria? Tell me what it is."
>
> This is our criteria.

Throughout the entire project, from its conception as an idea

to its completion as a written summary for school accountability,

the administration team provided "emotional support and

encouragement" to the group endeavor:

> Tony: I thought another strength was the ability of
> all of you, of all of us, to work together. I
> think that's a real big strength that's very
> unique, to get this many people working...
>
> Mike: You know, Ed, I don't think there was anything
> wrong with that [textbook teaching]...that's the
> thing, everybody thinks that's, "Oh, that was
> wrong. Oh, you shouldn't be doing that. You
> shouldn't." No. That's the way it was.
> Tony: That's the way we knew best.

Their modelling of "teamwork" and the affective skills of empathy,

trust, and mutual support contributed to the creation of a

cooperative and supportive school climate; their mirroring of

shared decision-making fostered collaborative and collegial

relations among team members.

Leadership was apparent in their action to involve parents in

the project. To address the skepticism of a few parents, whose

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negative attitudes were duplicated by their children in the program, Tony contemplated: "Maybe we get the parent involvement pinpointed specifically so that the parents know exactly what they'll be responsible for..." Mike proposed: "I would like to suggest that the next time we do this thing, perhaps have a parent meeting before we start and say that this is what we're covering, here's the plan." On behalf of the teacher team, "Tony and Mike" solicited support from the district to change the policy of formal reporting from March to April end in order to accommodate the Winter Studies Fair as an informal reporting format in March. "Most human institutions have an in-built resistance to change and thus all change requires application of pressure, whether by internal or external forces" (Reeves,1992,p.24). Thus the pressure applied by the adminstration was a positive means to maintaining the process of change.

Both administrators displayed "educational foresight" in the introduction of "structural change": they supported flexible timetabling during class instruction for professional group meetings in order to develop curriculum; they restructured class configurations for "multiage grouping" as provision for physical and psychological support to both teachers and students. In sum, the adminstration "fostered collaboration and increased opportunities for teachers to develop more certainty in curriculum and instructional practices" (Chrispeels,1992,p.12).

Contributions of the Teachers

It was by means of teacher interactions with teachers that a

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Professional Support Group was established with consensus for goal interdependence, the negotiation of mutual responsibilities, active participation, and support for clear procedures for systematic inquiry: "Will you draw up that little agenda...?". The data, referenced in Chapter Four, purports that a climate of trust, respect, caring, and clarity in communication empowered teachers to grow professionally. A researcher memo to this enhances the credibility of the interpretation:

> What has become so evident from viewing the tapes
> is the interaction of teachers in discourse which
> enables them to validate their experience in
> positive ways, to generate a climate of trust and
> support for implementing change through reappraisal
> of their experiences, both positive and negative,
> and planning with insight for future change.

Institutional Support

Three kinds of support categorized as "institutional", inclusive of "an organization for the promotion of a cause" (The Merriam-Webster Dictionary), were school district personnel, the parent group, and community resources.

School District Personnel

As the team of teachers developed the curriculum for the Winter Studies Program it became evident that the thirteen week program would not "fit" within school district policy for the second formal reporting date scheduled for mid-March. In fact, the "informal report" to parents in early February, as requested by the district, would be postponed until the end of March; the Winter Studies Fair, as a "demonstration of student learning", would serve that purpose for informing parents, students,

teachers, and the community. This condition necessitated the administration to "negotiate" with school district staff the alteration of the political and socio-cultural structures in place. Reeves (1991,p.22) refers to this as "two-way change", a number of "oscillations" occuring between the levels of discourse for change: "One can see that initially collaborative work can occur at a fairly low level in the hierarchy but that it will probably throw up issues which have implications for timetabling, resourcing, and other institutional structures if the outcomes are to be put into practice on a wider scale."

The school district personnel supported the Winter Studies Program in three ways. The first was that they changed the reporting policy timeline and sanctioned the Winter Studies Fair as an option for informal reporting to parents. Their expectation for the second formal report to follow before April end was fulfilled. Second, school district staff attended the Winter Studies Fair and contributed to favorable feedback:

    Patricia: The district staff were really interested in what was...
    Neil: It was interesting to talk to any of them...
    Patricia: They were quite impressed.
    Neil: Yeah, Bruce came over and really enjoyed it.
    Ed: Joe was impressed.
    Patricia: Yeah and Janet.

Third, the district resource person for educational programs agreed to assist the team in redrafting the student self-directed learning contract into a format adaptable to the Winter Studies Program. Patricia shared the conversation:

> We have to change that self-directed learning
> contract next year. Janet and I already talked
> about that. Cut the "vision" out, but also... .

Support from the school district added to the credibility of the

value in participating in collaborative action research, boosted

teacher morale, and enhanced the "reflection for action" for

planned change in the Winter Studies Program.

The Parent Group

With the introduction of "multiage grouping" presented to the

parents of students in the grade 6/7 classes at the beginning of

the school year, there had been some parent concern about "split

grade teaching"; this was a year for the staff to actualize the

"benefits" of class restructuring. Thus initially, the locally

developed curriculum for the "new" Winter Studies Program was

teacher-driven; the "partnership, or the triangle of the student,

the parent and us", was a *theory* at rest for the moment. With

the culmination of the Winter Studies Fair it was apparent that

the majority of parents were in support of the program and

requested involvement in the ensuing years.

> Neil: The interesting thing is, when I was talking to
> alot of parents on the Celebration Day...about
> what we had been doing this year on various things
> throughout the program...they would have liked to
> have been involved once they had found out what we
> had done. They made comments like, "Gee, I just
> wish I had been doing this when I was at school."
> Ed: I found that.
> Neil: "Is there any way I can help with those kinds of
> things?"

To allay the concerns of parents of students new to the program

Mike suggested that parents be involved "very early in the whole

process" next year so that their awareness of the curricular

links, learning experiences, "criteria", and "evaluation" be raised to a conscious level.

Community Resources

The term "community resources" encompasses access to natural environments, recreational facilities within these areas, and the advisory personnel knowledgeable in these areas. In Chapter Four these resources were represented as a base of support to the development of meaningful learning experiences for both students and teachers. From one perspective each of these can be conceptualized as support to Environmental Education: recreational facilities and natural environment sustain education *in* the environment; advisory personnel complement education *about* the environment; and it is the teachers and students who can utilize all three to commit to education *for* the environment.

What political, economic, and socio-cultural structures empowered teachers to develop professionally through the experience of change in the design and implementation of the new curriculum?

The Organizational Structures

A number of organizational structures were evident as support to the development of curriculum within a context of action research. Prominent political, economic, and socio-cultural conditions at the time of this inquiry created the opportunity for supporters, teachers, and students to interact collaboratively for the development of the Winter Studies Program.

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Political Structures

The prominent organizational political conditions that emerged as conducive to collaborative action research for supporters, teachers, and students showed some overlap. The conditions were:

1. "Demonstration for Celebration" - The Winter Studies Fair functioned as a structure for accountability: student accountability for progress in learning, teacher accountability for curriculum design, administrative accountability for the development of curriculum satisfying provincial guidelines; community accountability for validating the credibility of the Winter Studies Program;

2. Teamwork - it mirrored a coalition of support: for students, working in cooperative groups to meet their Personal Challenge; for teachers, sharing the decision-making process; for administration and researcher, "balancing" the agenda in the transfer of autonomy to teachers; for administration, negotiating for a waiver in district policy;

3. Critical Self-Reflection - it was a process for change: for students, reflection on their learning for change in meeting personal challenges; for teachers, reflection on their praxis for change in implementing new programs; for administration, reflection on school policy for change in enhancing parent participation; for the researcher, reflection on action research for change in its implementation within schools;

4. Self-Directed Learning Contract - it fostered independent learning: for students, assuming responsibility for one's own learning and "informed" choice in decision-making;

5. Multiage Grouping - it was conducive to continuous progress in learning; for students, alternative grouping for success in learning; for teachers, opportunities for autonomy in changing praxis;

6. Flexible Timetabling - it acknowledged different styles of learning and rates of learning; for students, time to learn at one's own rate; for teachers, time for in-school teacher team meetings for collaborative team planning; for the researcher, time to "do research"; for the administrator, time constraint relief;

7. Systematic Inquiry - it was a process to guide personal and/or professional development; for students, the "personal challenge" or self-directed learning contract; for teachers, the directive for curriculum design and adaptation after implementation; for the researcher, the methodology for collaborative action research inclusive of support to facilitation of discourse, teacher autonomy, and *theory*-praxis linkage; for administration, facilitation of clear procedures for theory/praxis links and change in praxis.

Economic Structures

The organizational economic conditions that provided support to, and created opportunities for, supporters, teachers, and students to be active participants in the Winter Studies Program can be perceived in terms of the "responsibility" each group

needed to assume:

1. for students - the accessibility to equipment and resources for the winter overnight campout, for meeting the "Personal Challenge", and accomplishing the self-directed learning contract;

2. for teachers - the acquisition of funds for teacher release time, for site transportation, and for student participation;

3. for the researcher - the solicitation of funds for teacher release time in the development of innovative curriculum from the school district committee;

4. for the administration - the procurement of funds for site transportation and solicitation for adjusted ski package rates for schools;

5. for the community - the provision for adjusted ski package rates and volunteer resource presentations.

Socio-Cultural Structures

The distinguishable organizational socio-cultural conditions that emerged as evidence to support collaborative action research for supporters, teachers, and students in the developing Winter Studies Program:

1. The "Demonstration for Celebration" - The Winter Studies Fair functioned as a condition for partnership in learning; for students, a forum for peer learning exchange; for teachers, informal conferencing with students, parents, and community members; for administration and the researcher, an occasion for school-community discourse; for the community, "celebration" of

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student achievement in learning and teacher accomplishment for curriculum development;

2. Negotiation - it was a process in decision-making: for students, "cooperation" with peers and teachers; for teachers, "collaboration" with peers and students; for administration, "representation in modelling" for teachers and students;

3. Collaborative Reflection - it was a process for change: for teachers, reflection in a collaborative setting created tension that motivated teachers to "transform" praxis; for administration, reflection in collaboration created opportunities to affirm the collegial process and change conditions affecting teacher praxis;

4. The Personal Challenge - it fostered problem solving behaviours and risk taking attitudes: for students, mutual responsibility in cooperative groups and "transfer for application" of skills in decision-making;

5. Multiage Grouping - it was conducive to "environmental education" experiences; for students, cooperative learning and varied of teaching styles; for teachers, autonomy in developing education *about*, *in*, and *for* the environment;

6. Flexible Timetabling - it increased opportunities for learning "beyond the walls"; for students, learning experiences *in* the environment; for teachers, reprioritization of "meaningful" learning experiences and time to collaborate; for the researcher, accessibility to physical space and accommodation to teacher availability; for administration, support to collegiality;

7. A Climate of Support - it created opportunities for positive

interaction: for students, having fun and helping out each other; for teachers, establishing a Professional Support Group; for the researcher, enhancing an ethos of camaraderie with refreshments; for administration, empowering teachers to actualize individual and group goals; for the community, sharing expertise with teachers and students, a two-way exchange of dialogue.

Summary

The purpose of this chapter was two-fold: one, to detail the community support system; two, to present the organizational structures which prevailed that created opportunities for students, teachers, and supporters to change through collaborative action research.

Members of the community support system were categorized into individual and institutional support. Individual support members included the researcher, administrators, and teachers. Both the the researcher and administrator functioned as a team through goal interdependence and an "unspoken" negotiation of mutual responsibilites. Their primary role during team meetings was in the facilitation of discourse through which they provided support to collegiality. Time for teacher team meetings was a crucial predictor for actualizing collaborative interaction. Specific contributions of the researcher to collaborative action research included the procurement of funds and physical space, advisory skills, and maintenance of systematic inquiry for the "coupling" of *theory* with praxis. Contributions particularized by the

administration to the team of teachers were positive interdependence, educational direction, effective communication skills, modelling of teamwork, strong affective skills, and leadership. Teacher supported one another within the climate of the Professional Support Group.

Institutional organizations of support were school district personnel, the parent group, and community rsources. Negotiation of alternatives to district school policy on reporting procedures was instrumental in establishing the "demonstration for celebration", the Winter Studies Fair. On viewing this Fair the parent group voiced support for Winter Studies; they expressed interest in active participation in the program. Community resources provided an access to natural environments, recreational facilities, and advisory personnel of an environmental nature.

The political, economic, and socio-cultural organizational conditions that emerged through data analysis created opportunities for supporters and teachers to grow professionally through their active participation in the development of curriculum. The conditions of the organizational structures that may have affected students are open to conjecture. In collaborative action research with teachers for the development of curriculum, students are an integral part of the process; to exclude them would limit the scope of the researcher's task to reinterpret the "big picture" by examining all the pieces to the puzzle.

Chapter Six

REFLECTION   ON   THE   STUDY

> My feeling...is that it is the interaction that
> makes the difference, not the information. It is
> the emotion, the psychological commitment that
> grows out of collaborative planning, not the
> intellect that brings constructive change
> (NCESRD,1989,p.63).

Introduction

In Chapter Four "dynamic" features of teacher discourse were presented as "metallic" threads which enabled teachers to form a cohesive body, a Professional Support Group, that emanated an ethos of camaraderie. The organizational conditions for the sustenance of this group empowered teachers to design and implement curriculum that mirrored the principles of Environmental Education, qualities for change in curriculum content and praxis.

Chapter Five extended the analysis to the examination of the support system that enabled teachers to engage in collaborative action research for the development of curriculum. Further, the political, economic, and socio-cultural conditions that provided support to the design and implementation of the Winter Studies Program and/or generated the circumstances for personal or professional change were suggested.

The intent of Chapter Six is to reflect on the process of collaborative action research. In this study there are two dimensions to this: the teachers in collaborative action research for curriculum development; the researcher in collaborative action research for theory development. The underlying question is, "What

evidence is there that collaborative action research transpired?"
Teacher discourse in action research will be examined for evidence
of the retrospection-prospection component of systematic inquiry.
It is this component which has the capacity to empower individuals
and groups to change.

Research Question Three

In what ways did this study embody collaborative
action research?

Collaboration for Curriculum Development

Through teacher discourse teachers were able to establish a
"commonality of understanding" about their world of "teaching" and
express trust, respect, and caring through their interactions. In
so doing, the Professional Support Group formed. It became crucial
to the development of curriculum for the Winter Studies Program;
its conditions of goal interdependence, mutual responsibility
through shared decision-making, active participation, and clear
procedures (systematic inquiry) ensured cohesion for collaboration
in the design of curriculum.

> Ed: There is nothing so powerful as an idea whose
> time has come.

Unlike the curriculum illustrated by Eisner(1979,p.229) as
"served up like Big Macs...precooked, prepackaged, artifically
flavored", the Winter Studies Program was without a manual.
Through group collaboration the learning outcomes were formulated,
influenced by the list of teacher-generated resources and learning

experiences. The design of the curriculum unfolded. As Neil summarized the development: "..We're giving them the background to the core knowledge and then we're giving them the opportunity to use those skills within another context, you know, in their thinking skills and making decisions...and taking responsibility and extending their learning beyond what we've given them." This framework for curriculum parallels the curriculum for environmental education in which "the learning environment be designed to create experiences for students that will encourage them to develop as motivated, informed and active people" (Bennett,1977,p.199).

The process of collaboration empowered the Professional Support Group to create a curriculum that incorporated *theory* with praxis. The occasion was the third team meeting in early March. The researcher approached the topic of assessment in curriculum development and shared a research article on the use of "benchmarks" stating:

> I just keep throwing out possibilities...so that
> when we go to looking at teacher assessment and
> student assessment we might want to look at
> something like this...

What resulted was the development of the teacher/student assessment tool titled, "A Progression of Competence" (Appendix C), for which teachers actively participated in generating four levels of achievement in content, skills, and attitudes. This "sequencing of content throughout the curriculum is called vertical organization", having the purpose of a progressive

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development of behaviours and skills to "expected outcomes" (Connelly & Clandinin,1988,p.144). As well, the curriculum mirrored developing "horizontal organization" as teachers addressed the issue of "balance" and "integration" through collaborative reflection on its interdisciplinary aspect:

> Bill: There was a natural feeling, I think with the kids in terms of high interest, things to do and learn...
> Neil: The whole dramatic and fine arts section is an important component to this whole thing. It just isn't science, it just isn't hands on...
> Ed: There is an emotional involvement there that you don't just get in some areas.

The Winter Studies Program spanned approximately eight weeks due to a "late start" in January: It could have utilized more time. There was agreement by all members of the team that "it was really tough for...getting through everything", "really difficult to cover what I needed to cover". If the pace is too great, there is danger of "overloading participants" since a large amount of effort and energy is needed in implementing change. For each core unit of knowledge "more time" needed to be scheduled. As Bill stated, "I need longer than a week". Although collegial groups "can be a powerful factor in speeding up the implementation process" (Reeves,1991,p.24), for innovation to be successful, it "needs to be reduced to manageable proportions"(Reeves,1991,p.23). The teachers became engaged in collaborative reflection for program change in the "timing" of curriculum implementation:

> Mike: It's a thirteen week program.
> Neil: We should start Winter Studies before Christmas...
> Tony: If the core could be completed in the weeks prior to Christmas...

This is the component of the action research process termed "retrospection-prospection", the ["observation of action"] *for* ["reflection for action"]; it is crucial for curriculum change and the improvement in praxis.

The "action research cycle" serves as a powerful vehicle for supporting teachers in systematic planning, acting, observing, and reflecting for action in curriculum development:

> Action research consists of deliberate
> experimental moves into the future, which
> change us because of what we learn in the
> process (Connelly & Clandinin,1988,p.153).

It becomes clear, therefore, that collaborative reflection in the development of curriculum "is a healthy form of staff development" (Rubin,1988,p.170);it supports teachers to develop professionally.

Action Research: Empowering Teachers

The action research process, as conceptualized by Lewin, is a spiral of cycles of planning, acting, observing, and reflecting. The conditions necessary for its actualization are active participation, shared decision-making, and reflection for change. Its purpose is two-fold: to involve participants at all stages of the process; to improve praxis, one's understanding of it, or the situation in which praxis occurs through establishing linkage between *theory* and praxis. In collaborative action research it is the retrospection-prospection dialectic, the observation of action *for* reflection for planning, that can create tension that provides momentum for teachers to "transform" praxis and activate

change in the organizational structures impinging on that praxis.

Systematic Inquiry

The process of action research as systematic inquiry for teachers was facilitated by the researcher. Although it was the researcher who deliberately presented the research *theory* for reflection on praxis, as teachers articulated their "mind frames", it became apparent that the issues that surfaced for discussion represented discrepancy between *theory* and praxis. Several themes reoccurred throughout the last three meetings - use of reflection journals, student assessment, self-directed learning contracts and students' conceptions of science; teacher discourse mirrored the struggle of the teachers to resolve their discontent with their praxis.

Retrospection-Prospection

The retrospection phase of action research emerged as a stage of "negative reappraisal" in which the teachers saw "their present practice in a critical light" and struggled to change through modification or abandonment of that praxis (Reeves,1991,p.21). On the theme, the use of self-directed learning contracts, teachers expressed their frustration with the "rhetoric-reality" gap:

> Patricia: Conceptually, it's been very different from anything in their experience.
> Mike: It's been one of the hardest things to teach to kids in terms of making sure they understand why they're doing it, what it is they're doing, and how they go about doing it.
> Neil: There's a fair amount of responsibility placed on them that they haven't had before.
> Patricia: It's also about simply grappling with vision, goal, baseline, minimum, maximum
> Mike: challenge

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Patricia: those goals
   Mike: It's been really tough. I've found it very difficult.
         I've spent alot of time on it making sure that kids
         understood what it is that they were going to be
         expected to do.
   Neil: Yeah. Understanding vocabulary was key to it, you
         know.
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Critical self-reflection on praxis was enhanced through

collaboration, what the researcher referred to as "collaborative

piggybacking", in that one mind frame could trigger a similar or

alternative perspective, or a group effort to come to some

understanding of the dissonance. Retrospection, reflection on the

action, evoked tension which typically propelled discourse into

prospection, reflection for action - ways to resolve the conflict,

suggestions for alternative praxis - in order to decrease *theory* -

praxis discord. The discourse following the preceding episode

unfolded:

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     Ed: You know, it's something we could do for another
         time around is perhaps make up several quite
         different examples of those, actually fill them
         out would it be the students. Go through with the
         kids and they get some idea of what's required.
   Bill: I think we should as teachers take time as a group
         going through and coming up with common agreement
         on each, what each one is...
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Teachers agreed that the self-directed learning contract needed

"reteaching"; students needed more opportunities to apply it

within teacher-directed praxis - the acquisition of skills -

before transfering it into the student-directed context.

Some situations of retrospection-prospection generated change

in organizational structures. During reflection on the arrangement

of displays for the Winter Studies Fair Mike engaged in negative

reappraisal: "...I think one of the things, we should have spilled

it out into the hallway and some down the hallway". Patricia

added: "It wasn't practical at all because I took my kids out for

that very reason that there were too many kids and we were

starting to get lumps of kids..." Suggestions for planned change

included the restructuring of "open house" times and alternating

groups, to the evening.

The ensuing incident of retrospection-prospection resulted in

praxis "on hold". The conversation emerged after the researcher

shifted autonomy to the teachers to direct discourse to their

concerns; the topic - parent feedback on the Winter Studies Fair:

> Neil: One other thing we didn't do, that probably
>   would have been very interesting, is to have
>   a parent evaluation at that day to take home
>   and fill out and I'm wondering if we shouldn't
>   still send something like that...
> Ed: Us make up the questionnarie but leave room for
>   them to expand, is that what you are suggesting?
> Patricia: I wouldn't do it. I wouldn't do it for this one
>   and the reason being we'll tie into a whole
>   bunch of emotions running high right now...

Patricia voiced concern for the political conditions of the

moment: the anti-Year 2000 citizen group CARE, uninformed parents

(parents not in attendance at the Fair), the concurrent informal

report to go home. The question was posed: "It would have been

good to have had it there, wouldn't it?"

> Neil: If we had it there, the parents came and saw and
>   responded to it, that would have been better. Now
>   it's too late.
> Patricia: Yes. I think that would have been good. I don't
>   think we should send anything home now. I think it
>   would be really skewed. that would be my concern.
> Neil: I agree.

Although involving parents in program assessment was "put on

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hold", the commitment by administration and teachers to link *theory* with praxis, *partnership* in decision-making, was prospection for "action".

Retrospection, teacher reflection on action as a personal "dynamic" quality, was crucial to the continuing development of the Winter Studies Program; it inspired the teachers to consider options for change. Teachers had struggled with their feelings about the poor quality of thinking books and student reflections. Where student achievement does not occur with teacher praxis Chrispeels'(1992) refers to this as teacher "uncertainty about their 'technical craft'". In this situation teachers continued to support the *theory*:

> Ed: The idea is good but I think we have to do some teaching, more specific teaching about just what do you deal with in there.

Prospection entailed "brainstorming": What resulted were very specific strategies to support teachers in their praxis - time to "journal", specific sentence starters, consistent locations for reflections, color-coding books for easier collection, teacher demonstation of "reflection on action". Reaching consensus for "planned change", Mike modelled: "...we have to be very direct and we have to say to them, "'Today in your thinking book, I want you to tell me...' and we do that for about four times and then we say...'You tell me if you have a question and what question you're thinking about'..." The need to develop questioning skill for student reflections was a priority.

Teachers appeared to be driven to resolve the discrepancy

of *theory* with praxis. Student conceptions of "what is science" had been a topic of concern throughout the development of the Winter Studies Program. That teachers made "a lot of assumptions" about students making links within interdisciplinary curriculum was substantiated:

> Mike: We do. I assumed that they would see, they were
> doing population studies of animals basically when
> they were out tracking in the field. What could be
> more scientific? They're setting up a scientific
> experiment to do population studies.

But feedback from the student assessment forms on the Winter Studies Program conferred that at least 50% of the students "felt that they didn't learn science" throughout the Winter Studies Program. While the administration consciously searched for the reasoning to explain *theory* with praxis: "What are we teaching in science, the content? Are we teaching the enquiry, are we teaching...?", teachers reflected on their observations in an unconscious attempt to rationalize the discrepancy:

> They told me that hypothermia is not science...
> the effect of cold on the body!
>
> ...very few put down "Nature In Winter" as science.
>
> Those who said there was science related it to
> experiments with Bob on water, snow, and ice.

Neil reasoned, "It comes from a different format. Therefore, they didn't recognize it because they have...(gesturing his hands to his head) shut as to what science is."

> Mike: You know, that comes from our science kits. It's
> wrapped up. Now we're doing Earth, Space, Snow...
> we're doing Batteries and Bulbs...
> Neil: Certainly there's a place for that, doing those
> discrete kinds of things like that. We have to, I
> think.

> Ed: But they have to realize that's not all inclusive
>   of science.
> Neil: Winter Studies Program was a program intended to make
>   connections...and lay things together.

In retrospection, the teachers conceded that they had "assumed that they (students) would make those links". In planning for change in praxis teachers affirmed that the "science" in the Winter Studies Program was "a start of a good change in science education"; it was, as Ed voiced earlier, "still evolving". Affirming teacher praxis maintained a climate of positive self-esteem in experiencing "uncertainty about their craft"; negative reappraisal enabled teachers to develop their "consciousness of change":

> We made some assumptions that the kids were able
> to do things that they weren't able to do simply
> because we were rushed for time, hoping that they
> would be able to. The self-learning contract is
> probably a good example.

In the actualization of the phases of the action research cycle teachers had "created" a locally developed program of Winter Studies. Prospection generated enthusiasm - photography, better use of videotaping, strategies for representation, questions for cueing, criteria, student change, teacher change, program change...Perhaps the most inspiring outcome of prospection for program change in Winter Studies was planning for a "residential site" camp. The possibilities for meaningful learning experiences for *all* students seemed endless. In a narrative of experience Mike captured the moment:

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> You know, sitting in that survival, your
> quincy, and reading Robert Perry or Scott,
> their last diary...think of Sam McGee
> sitting in his furnace on Lake LaBarge.

For teachers, the opportunity to engage in collaborative action

research empowered teachers to develop professionally:

        Researcher: Would you say that there has been alot of
                    growth then for all of us?
              Neil: Oh yeah.
                Ed: Certainly.
              Neil: Absolutely.
        Researcher: In what areas?
              Bill: Adaptive teaching.
                Ed: I'll certainly be alot more comfortable in doing
                    it next year.

Action Research: Empowering Students

Although the scope of this study was limited to teacher

discourse in collaborative action research, "action research" as a

process for student inquiry was beginning to emerge from the

analysis of the data. This concurs with Elliott's (1992) "sharing

of vested interest": As teachers become action researchers into

"how to pedagogically improve the quality of students' curricular

experiences", as they model problemsolving behaviours and critical

self-reflection, students assume the role as action researchers

into "how to improve the quality of their environment". In

reviewing the data, there is no evidence to support that education

for the environment was actually occurring; that is, students

taking responsibility to sustain the natural environment.

However, students *were* self-directing their learning in meeting

their "Personal Challenge" and that in itself, is concordant with

action research in process. In fulfilling self-directed learning

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contracts for "Nature In Winter" students were planning, acting, reflecting on their action and planning for change:

> Mike: They (students) did scientific research when they were going out doing their animal tracks and when they couldn't do a particular thing, they had to change their hypothesis, they had to change their experiment, they had to actually go out and duplicate what a foot looked like.

Action research is a process for change; it empowers the individual, through reflective inquiry, to change one's actions or the structures that infringe on the actions. As students in the Winter Studies Program executed their "Personal Challenge", independently or in cooperatively; as they fulfilled their self-directed contracts and demonstrated their learning; students experienced change.

> I think that kids can be action researchers just as we were action researchers when we did this. In other words, they lay out the plan, it's the self-directed contract. But action research extends beyond that...they test, they deal with the problems they run into, they adjust to that, and they have to evaluate.

Action Research: Empowering the Researcher

Action research is a "dynamic process" that aims "to bring together through mutual attraction, discourse and practice and construction and reconstruction, so that improvements in practice and understanding can be made systematically, responsively and reflectively" (McTaggart & Kemmis,1982,p.10). In this study of teacher discourse in collaborative action research "understanding"

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of this process unfolded as the researcher became immersed in the research.

Systematic Inquiry

In the initial stage of the planning for collaborative action research The Action Research Planner was like a manual to the driver of a car with a flat tire. The researcher implemented each step of the process: an agenda to ensure that the researcher's topics were covered, research articles for discussion to provide the *theory* for the praxis, videorecording for document collection, reflection journals for all, and self-reflective questionnaires for inquiry into teacher conceptions of children's learning of science. Concurrent with the actualization of the action research cycle was the inductive-deductive interplay in the research process. The researcher memoed it as shifting phases of development - from inductive to deductive to inductive - as the research study unfolded:

> the narrow and limited research background in the initial phase evoked a general, broad-based question or problem [inductive to deductive]; from the global topic to codes in analysis [deductive to inductive]; from codes to relevant studies in the literature [inductive to deductive]; from literature study to category analysis [deductive to inductive]; from categories to more applicable literature contexts [inductive to deductive]; from context to research questions [deductive to inductive]; from research questions to generated theory [inductive to deductive]

As the spiral of action research cycled through four stages the research process became progressively more deductive. What became apparent, was that the "meaningfulness" of the teacher discourse could only be appreciated *after* the researcher had become immersed

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in the analysis of the data.

Retrospection-Prospection

Negative reappraisal or critical self-reflection can lead to action for improvement in praxis. In this study, retrospection on the researcher's practice had the purpose to establish "connoiseurship"; that is, through critical self-reflection, to bring to light "an awareness and an understanding of what one has experienced" (Eisner,1985,p.92).

In reflection on the researcher's approach to "systematic inquiry", excessive rigour to the administrative components of the process was restrictive to the collaborative nature of action research. One memo illustrated this case in point:

> The preoccupation with the researcher questionnaire
> hampered teacher autonomy and decreased momentum
> in teacher discourse. By being too thorough in
> analyzing the parts of the process, it seemed to
> be more of an "interview" or "conference" than
> collaboration on reflection for implementing change
> into a concrete, visible format.

An earlier memo during the initital stage of curriculum planning had foreshadowed this dilemma: "What was initially perceived as key to the "action research" (discussion on *theory* for reflection and science assessment) is not as illuminating as the teacher conversations that convey perceptions of 'their' real world." The topics or issues that emerged from teacher discourse represented their "priority of the relevant" for as Corey(1982,p.55) stated, "Much greater influence will be exercised, however, by those data a teacher himself brings together and interprets..."

The use of "guiding questions" to direct reflection for plan

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revision was neglected by teachers. Their language, as specified

in the Action Research Planner, was "jargon". As Bill commented,

"We're already thinking of revising the plans. I already have a

good idea of how to do that. I do that on a regular basis in every

unit we teach, every year, every day." Researcher bias, the

perception that "action research" was something "new", surfaced

visibly through Mike's comment:

> ...basically it (action research) is stuff we've
> we've done all our lives and what they are now
> saying is, "It's valued"; the stuff that we do
> is valued, because we're getting more and more
> into that as we get away from canned textbook-
> type programs...

Still, questions posed by the researcher facilitated

discourse. Through ongoing reframing of questions on *teacher-*

generated issues, the researcher encouraged teachers to deliberate

in reflection until some resolution or prospection was reached.

The topic of assessment of children's learning was raised several

times by the researcher:

> How can we assess children's learning from watching
> the video...is this something you already have
> internalized and the videotape then just becomes a
> verification of what we knew all along...?

> How did we assess children's learning...we did
> alot of planning...?

> ...like we got alot of time to get together to plan
> but I'm wondering if there needed to have been time
> to get together to really assess kids?

This phenomena could be interpreted as a parallel to what Guba

(1987,p.40) refers to as, in the process of evaluation as

negotiation, "the product...is not construed as a series of

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conclusions and recommendations but as an agenda for further negotiation." Suggestions for improvement in assessment praxis therefore became topics for contention. A self-reflective cautionary note was recorded:

> While the obvious benefit of the facilitator was to direct critical self-reflection through questioning, there was a fine balance when the questioning was more research-oriented or valued by the researcher (bias) than by the teacher and the enthusiasm of the collaborative process - that spark of collegiality - seemed to die. It brought to mind the research of David Tripp (1990) regarding the "politics" in facilitation; the balanceing of power and autonomy "between the practitioners and the facilitator".

In retrospection, "Does my 'agenda' to direct 'reflection' on topics impose loss of teacher autonomy?" Tripp's response to this question might be: "In socially critical action research it is often the faciliator who first raises the kinds of issues that could turn a practical action research project into a socially critical one."

In distinguishing this research as "practical action research", the researcher functioned in a dual role as facilitator and collaborative member of the teacher team in action research. This "wearing of two hats" presented a dilemma to the researcher: the "researcher" focused on "how" and "why", a learning process-based inquiry; the "teacher" converged on "what", a product-outcome-based inquiry. At what point does the researcher accept loss of autonomy in shifting the agenda for discourse to the team? There were several occasions when the researcher risked researcher-teacher collegiality for the sake of "agenda delivery" in denial

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of teacher "overloading" and teacher priorities:

> Bill: At 11:30, I think I'll tell you when 11:30 gets
> here, so we can schedule (the revised plan).
> Researcher: Well, we're working on here right now.
> Bill: We don't want to leave without having one.
> Researcher: So, with this student change, can we incorporate...

In retrospection of this occasion, little regard by the researcher to display active listening skill or to acknowledge teacher autonomy was shown. If continued, the researcher would most likely have undermined the collegial process. What was required was a "holistic" perspective in which the "realities and perceptions" of teachers needed affirmation: "Too specialist and narrow a focus will not gain credibility with our staff, we have to learn to...be prepared to learn, modify and change our strategies" (Reeves,1991, p.21).

Another dilemma for the researcher was the nature of the study. Assuming an action research-naturalistic inquiry implied the dialectic of a "systematic-investigative" approach, clear procedures-emerging guidelines. To know *when* and *which* to prioritize for the moment presented conflict. As Neil articulated, "Sometimes we need this, some kind of (questions), a loose structure just to organize the thoughts of the group." It wasn't until the end of the study that this dilemma reached the researcher's level of consciousness.

In prospection, the researcher needs to continually be aware of pacing; "overloading" teachers with a number of issues and/or questions was overwhelming. Teacher weariness began to materialize by the end of the study; humor was less evident. In a post Winter

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Studies reflection attention was drawn to "time frame as critical to the study"; when teacher intent for curriculum development had been satisfied, it was necessary to return "commonality" to the group, to re-establish goal interdependence if team meetings were to continue:

> ...(action research) requires alot of energy;
> teachers begin to burn-out, lose enthusiasm...
> become more easily sidetracked once their
> intentions have been reached...

In what ways was the researcher empowered by action research? Retrospection created avenues for introspection into both personal and professional development: The appreciation of collaborative action research as an empowering process for the creation of innovative curriculum, for establishing camaraderie with colleagues, and for valuing critical self-reflection as a tool for improving one's praxis: "I have changed my whole perspective on how I like to work."

Summary

In this chapter collaboration was highlighted as a process that empowered a team of teachers to create a curriculum that reflected *theory* with praxis. The action research process, a spiral of cycles of planning, acting, observing, and reflecting, necessitated active participation and improvement in praxis or the understanding of that praxis. Through a process of systematic inquiry teachers reflected on action for planned change. The retrospection-prospection phase enabled teachers to change through modification or abandonment of praxis, or to change the structures

that infringed on their praxis; it enabled them to develop professionally.

For students, the "Personal Challenge" or self-directed learning contracts represented "action research". The experiences that students created for themselves through the actualization of the contracts empowered them to change.

Action research, as a research methodology, was an inductive-deductive interplay of stages of progression. Through critical self-reflection the researcher aimed to establish "connoiseurship", awareness and understanding of the experience. The researcher's dual role as facilitator and collaborative team member was a dilemma in balancing autonomy; a holistic perspective to affirm teacher agendas, to pace the number of issues, and to ensure collegiality in collaboration was imperative.

Chapter Seven

A DISCUSSION OF THE STUDY

> ...a social setting when people can work together,
> dream together of a better community, and try to
> translate their dreams into the language of action
> and evaluation (Shumsky,1982,p.69).

Introduction

The intent of Chapter Seven is to review the context for the

study within which to present the findings from the analysis of

teacher discourse in collaborative action research. A discussion

follows as a precursor to the conclusions. The limitations to the

study are considered and implications for future study are

suggested.

A Review of the Educational Context for the Study

The Global Context

In a reconsideration of the educational context within which

the case study originated, the "restructuring of schools" for

school improvement was promoted. Within communities in British

Columbia teachers, as reflective practitioners, were encouraged to

engage in collegial collaboration for professional development

through the process of curriculum development. The "challenge of

change", as a directive to the "quality of life" experienced

within a community and school environment, constituted changes in

attitude for changes in praxis. Confronting the organizational

structures that constrained individual and collective action for

change was imperative.

The Local Context

This study furnished the researcher with the opportunity to engage with teachers in collaboration for the development of a curriculum for a Winter Studies Program. Analysis of teacher discourse illuminated the significant features *about* teacher interactions with colleagues and the community *in* collaborative action research *for* curriculum in change. From the researcher's perspective the purpose of this study was three-fold: one, an inquiry for the construction of knowledge and understanding about the features of teacher interactions with colleagues and curriculum content within a context of collaborative action research; two, to highlight the conditions within the organizational structures in action research that may have supported change in teacher praxis and program development; and three, to illuminate the processes in collaborative action research that promoted professional and curriculum development. Not as conscious to the researcher was the intent to reflect on one's own praxis and beliefs throughout the facilitation of the case study.

A Case Study of Professional and Curriculum Development

Teachers who collectively "volunteer" to participate in collaboration for the development of curriculum share a "commonality of interest" necessary for innovation (Reeves,1991).

As the researcher examined teacher interactions with

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colleagues in the development of the Winter Studies Program features of discourse emerged to illustrate that teachers in a collaborative context share a common understanding about "teaching" and through that experience, collegial relationships and curriculum develop.

Research Question One: The Findings

What features of teacher discourse characterize
teacher interactions with colleagues and the
curriculum content?

Teacher interactions with colleagues

Teacher interactions with colleagues in a context of collaborative discourse were characterized by three dynamic features: commonality of understanding of praxis, narratives of experience, and tension. In the articulation of their perspectives on teaching praxis, and their narratives of personal and professional experience that illustrate them, teachers expressed respect for, and trust in, their colleagues. Empathy with colleagues "experiencing change" encouraged group cohesiveness; this "clear cooperative interdependence" enabled them to manage the tension that surfaced during the expression of "alternative mind frames". Indicative of this were qualities of trust, respect, caring, and clarity in communication that emulated within a climate of camaraderie. Such interactions were conducive to the formation of a teacher Professional Support Group. Through goal interdependence and negotiation of mutual responsibilities in shared decision-making, teachers were active participants in the

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process of collaborative action research.

As was evident in the development of the Winter Studies Program, a Professional Support Group is necessary for any long-term implementation of innovation (Johnson et al,1984); it preserves teacher self-esteem and is conducive to curriculum development by nature of its collegial "discourse community" (Lieberman & McLaughlin,1992). Curriculum development is interdependent with professional development; change within curriculum necessitates change within praxis.

<u>Teacher interactions with curriculum content</u>

Teacher interactions with curriculum content in a context of environmental education were characterized by three principles: environmental consciousness, meaningful learning experiences, and personal dynamic qualities (OECD,1991). Each was specified to the particular context of study in curriculum development.

In the development of the Winter Studies Program, a context for "the challenge of change", teacher change in praxis was predicated by a "consciousness of change" characterized by: willingness to change, agreement of knowledge for and about change, and control of change, as in planned action. This is consistent with Baird's (1992) conception of "metacognition" as embodying features of knowledge, awareness, and control.

Teacher interactions with curriculum content for the Winter Studies Program generated "meaningful learning experiences". These were conceptualized as curricular experiences for students and, the learning conditions in which teachers were able to develop

such practice. The curricular experiences for students within a context of environmental education included learning *about* the environment (teacher-directed, "traditional" praxis), learning *in* the environment (teacher-directed, "authentic" experience for "transitional" praxis), and learning *for* the environment (student-directed, "authentic" challenge for "transformational" praxis). The latter experiences necessitated prerequisite background knowledge *about* the core content *in* an authentic setting as preparation for the actualization of self-directed learning contracts *for* lifelong learning. The learning conditions in which teachers were able to develop such experiences were: the provision of options to meet student needs and interests, the modelling of self-reflection in praxis for developing skills of independent learning, and a community of support for the teachers through the organization of structures inclusive of political, economic, and socio-cultural contingencies.

Teacher interactions with curriculum content illuminated personal dynamic qualities. Teacher dynamic qualities that emerged from working within a Professional Support Group for the development of curriculum were: *commitment* through group goal interdependence, *responsibility* through mutual negotiation, *initiative* in active participation for action research, *adaptability* through collegial interaction, *flexibility* in utilizing available resources, and *critical reflection* in problem solving for change. It is debatable whether or not the state of "consciousness of change" can be separated from the

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development of personal dynamic qualities (Elliott,1991b).
Certainly, metacognitive awareness of change is characteristic of
the personal dynamic qualities that enable change.

Teacher interactions with colleagues in the assessment of
curriculum development articulated student dynamic qualities that
became visible as students engaged in learning *for* the
environment: *risk taking* in being assertive, *problem solving* in
adapatability, *cooperative* in sharing goal interdependence,
committed and *responsible* in actualizing a "Personal Challenge" or
a self-directed learning contract, and *reflective* on their
experience. Such personal qualities emulated a "consciousness of
change": the awareness of their needs, and the knowledge and
"control of change" in creating the conditions to satisfy those
needs; willingness to change, although not always voiced, may have
surfaced as "commitment" in fulfilling "the contract". As with
teachers, collaboration was an enabling process of support to
peers in change.

Teacher interactions with curriculum content were supported
by individuals exclusive of, but not external to, the Professional
Support Group. In the development of the Winter Studies Program
the support personnel were exclusive of the implementation of
change in classroom praxis, but not external to the collegial
conditions for interaction within a Professional Support Group.
The personal dynamic qualities of support to the Professional
Group that emerged from the study were: *commitment* to support,
responsibility for the procurement of funds, *initiative* in

modelling strategies for change in praxis, *active social inquiry*
for reflection on *theory* for praxis, *leadership* in support of
action research, *sensitivity* to the Professional Support Group
climate for maintaining discourse momentum and gauging for
overload, and *reflection* in problem solving concerns. In addition,
supporters to the Professional Support Group articulated a
"consciousness of change"; that is, as facilitators for curriculum
development within a school, they were aware of the need to change
their praxis, reflective on change for teacher praxis, and voiced
knowledge of the value in planned change.

Discussion

Meaningful curriculum change in schools does not occur in
isolation, but most effectively within a context of collaboration.
The study of the Winter Studies Program illustrates the power of
"mutuality and partnership" (Reeves,1991) in the establishment of
a Professional Support Group; it empowers teachers to interact
collaboratively for the development of curriculum and in so doing,
develop professionally. Curriculum development that reflects
principles of education *for* the environment parallels teachers in
collaborative action research: It is an interactive process that
unfolds as individuals engage in reflective action in "finding and
implementing solutions to relevant real-life problems" (Elliott,
1991a,p.29). What is crucial to its progression is the support
system and organizational structures that empower individuals to
change.

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Research Question Two: The Findings

> What support, both individual and institutional,
> facilitated professional and curriculum development
> in action research?

Members of "a community of support" to the Professional

Support Group in the development of curriculum for the Winter

Studies Program were categorized into two areas, individual and

institutional support.

Individual Support

Members of this group included the researcher, administrator,

and teachers. The researcher and administrator collaborated as a

team through goal interdependence and an "unspoken" negotiation of

mutual responsibilities. Their primary role during team meetings

was "facilitator" of discourse through which they provided support

to promote collegiality. A function of "supervising conversation"

maintained momentum in teacher discourse.

The specific contributions of support to the Professional

Group by the researcher were: to mobilize resources such as funds

for teacher release time and physical space for meetings; to

provide clear procedures through the establishment of an "agenda";

to collect and store information for later access; to act as a

"change agent" or "advisory teacher" through effective

communication skills (paraphrasing, restating, questioning for

clarification, summarizing); to implement systematic inquiry, the

action research cycle, and address the issue of *theory*-praxis

discrepancy through questioning for collaborative reflection.

The particularized contributions of support by administration

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were: visibility at meetings, modelling of strategies for teacher praxis, concept clarification for consistent praxis such as in the use of thinking books and/or reflection journals, ensuring accountability to district guidelines, modelling teamwork for the development of affective skills for a supportive school climate, shared decision-making, and leadership in negotiating for restructure in district policy and classroom age grouping.

Teachers provided support to one another through the establishment of the Professional Support Group. It was the quality of "time for teacher team meetings" that emerged as the crucial predictor for their "collaborative" interaction.

Institutional Support

Inclusive of "institutional support" were school district personnel, the parent group, and community resources. Through negotiation the administrative team was able to waiver district policy timelines for formal reporting to parents and solicit assistance for the redrafting of the learning contract. The parent group and school district personnel provided positive feedback to the Winter Studies Program. Access to community resources for support to the curricular experiences included natural environments, recreational facilities within these areas, and advisory personnel knowledgeable in the core curriculum units.

The Organizational Structures

Prominent conditions of organizational structures emerged as support for curriculum and professional development.

Political Structures

Provisions of a political nature that were conducive to collaborative action research for supporters, teachers, and students were: the "Demonstration for Celebration" or Winter Studies Fair as a condition for accountability; teamwork as a condition for a coalition of support; critical self-reflection as a process for change; the self-directed learning contract as a structure for fostering independent learning; multiage grouping as a structure for continuous progress in learning; flexible timetabling as a condition to acknowledge different rates of learning and styles of learning; systematic inquiry as a process to guide personal and/or professional development

Economic Structures

Economic provisions that enabled teachers, supporters, and students to actively participate in the Winter Studies Program were conceptualized as "mutual responsibilities". Each group was responsible for the securement of funds and/or resources that augmented their participation: for students, access to equipment; for teachers; aquisition of funds for release time and transportation; for administration, procurement of funds for transportation and solicitation for adjusted ski rates; for the community, provision for adjusted ski rates and volunteeer resource presentations.

Socio-Cultural Structures

Socio-cultural provisions that supported the curriculum development and enhanced the climate for collaboration were:

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the "Demonstration for Celebration" or Winter Studies Fair as a condition for partnership in learning; negotiation as a process in shared decision-making; the "Personal Challenge" as a structure for fostering problemsolving behaviours and risktaking attitudes; multiage grouping as a structure conducive to "environmental education" experiences; flexible timetabling as a structure for learning "beyond the walls"; a climate of support as a condition for positive interaction.

Discussion

Collegial collaboration for the development of curriculum, for the implementation of innovation, enhances staff development; staff development promotes "teacher professional development" for it is the teacher that is "at the centre" of any improvement or change within an organization (Wideen,1987). Implementation of innovative curriculum implies institutional change; the research on school restructuring "attests to the difficulty, complexity, and fragility" of change (Chrispeels,1992). The importance of "support" to the initiation and implementation of new programs cannot be overruled. Without changes in the organizational structures and processes of the institutions, change is unlikely (Barnes,1992).

In this study "a community of support" sustained the development of the Winter Studies Program. Both the administration and advisory teacher functioned as facilitators for, and supporters to, curriculum and teachers in change. The administrative team was a "catalyst" for change; where

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organizational structures needed restructuring, support was there.
"As change is necessarily about learning, then the cycle of
review, planning, action, and evaluation is a good learning model"
(Reeves,1991,p.23). Opportunities for professional learning arise
through collaboration in action research.

Research Question Three: The Findings

In what ways did this study embody collaborative
action research?

The Professional Support Group was an organization for
collaboration in the design and implementation of curriculum: the
collaborative process enabled members of the team to incorporate
theory with praxis in the creation of assessment tools that
displayed "vertical organization" and to develop interdisciplinary
content that exhibited "horizontal organization". The action
research cycle served as a "vehicle" for empowering teachers to
transform curriculum and teacher praxis. The retrospection-
prospection component of the cycle, reflection *on* action for
reflection *for* action, supplied the "power".

Teacher Empowerment

The retrospection-prospection dialectic appeared through
teacher discourse as teachers struggled with discontent in their
praxis. Reoccurring themes for discussion were: use of reflection
journals, student assessment, self-directed learning contracts,
and students' conceptions of science.

"Retrospection" emerged as a stage of "negative reappraisal",

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critical self-reflection for the modification or abandonment of praxis. In the collegial group "collaborative piggybacking", one frame triggering another, was interpreted as a collective effort to come to some understanding of, or rationalize, dissonance between *theory* and praxis. It seemed that retrospection created tension which provided momentum to propel discourse into prospection, reflection for planned change or for ways to resolve the discord.

The retrospection-prospection dialectic compelled teachers to change organizational structures and in some cases, to put planned change "on hold". Retrospection was a personal "dynamic" quality that inspired teachers to consider options for change; brainstorming was a strategy for prospection, commonly used to generate ideas for the formation of actions.

Teachers seemed "to be driven" to resolve the discrepancy in theory with praxis. Affirming teacher praxis maintained a climate of positive self-esteem in experiencing "uncertainty about their craft"; negative reappraisal enabled teachers to develop their "consciousness of change", transferring knowledge about the need for change in praxis from one core unit of curriculum to another. Prospection was a device that generated enthusiasm and excitement for planned change as an extension of curriculum for the improvement of praxis.

The dialectic of retrospection-prospection as a component of the action research cycle empowered teacher to develop professionally through the improvement of praxis and refinement of

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curriculum.

Student Empowerment

In the analysis of teacher discourse evidence for students as "action researchers" began to emerge. Although it was apparent that students had not involved themselves in learning *for* the environment, they were engaged in active inquiry by their actualization of the self-directed learning contracts. Fulfilling a "contract" or "Personal Challenge" evoked the action research cycle: planning, acting, reflecting on their action, and planning for change. Through self-reflection on their learning students experienced change, personal growth.

Researcher Empowerment

Through the process of systematic inquiry the researcher was able to develop some appreciation, a sense of connoiseurship, of the "meaningfulness" of the components of the action research cycle. For the research study itself, it wasn't until the researcher was "immersed" in the analysis of teacher discourse that the methodology became meaningful. For the researcher it was an ongoing interplay between shifts in perspective - interchanging ends of a telescope - inductive to deductive to inductive reasoning.

Retrospection, critical self-reflection, enabled the researcher to continue to develop a state of "consciousness of change" for change in research praxis: excessive rigour in systematic inquiry was restrictive to the collaborative nature of action research; the use of specific "guiding questions" to direct

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reflection mirrored researcher bias in the perception that "action research" was new - teachers already have their own internalized repertoire of questions that guide their reflections for the revision of plans.

Critical self-reflection supported research praxis that was effective: research facilitated discourse through reframing of *teacher*-generated issues encouraged deliberation in reflection until prospection was reached; meeting agendas did serve the purpose of managing discourse - "staying on track".

Two dilemmas emerged as the researcher collaborated with teachers. The first concerned loss of autonomy: In the dual role as facilitator in, and collaborative member of, the teacher team in action research there was discomfort in the pull for agenda autonomy, the researcher versus the teacher. There had been several occasions when the collegial relationship between the researcher and the teacher was placed "at risk" for the sake of "agenda delivery". The second focused on the "nature" of the study: Assuming an action research-naturalistic inquiry created dissonance with respect to the dialectic of a "systematic -investigative" approach. There was frustration in "knowing" what to prioritize for the occasion: clear procedures or emerging guidelines?

In prospection, the researcher's state of "consciousness of change" was expanding: awareness of pacing to gauge for overloading was key to maintaining collective momentum and collegiality; renegotiating goal interdependence once the original

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intentions of the Professional Support Group had been achieved was crucial to sustaining the group for further action research.

The process of action research empowered the researcher to create avenues for introspection into both personal and professional development.

Discussion

Action research is a process for change: it necessitates active participation at all phases of the process; it emphasizes shared decision-making and compels reflection for planned action - improvement in praxis or the understanding of that praxis or the conditions within which the praxis takes place (Kemmis & Carr, 1986). Interactive discourse is emphasized for the provision of a "variety of perspectives on the effects of action and the constraints experienced" (Kemmis,1982,p.13). In the study of the Winter Studies Program curriculum development was achieved through collaborative teacher discourse. It was the component of the retrospection-prospection dialectic in action research that enacted change, "action" for the refinement of the curriculum and for the resolution of the discrepancy between *theory* and praxis. Students were becoming action researchers through the actualization of their "contracts". For the researcher, action research was a process of systematic inquiry, critical self-reflection on one's research praxis and beliefs:

> As the research unfolded, as tension relaxed, the journey in research emerged with the researcher along to enjoy the ride. The research began to be crafted by the teachers for whom the research was intended to benefit (Researcher Memo).

<u>Conclusions to the Study</u>

In the consideration of research findings as "an intrinsically valuable resource" for teachers, Doyle (1988,p.101) presents three conditions for their successful consideration for practice: one, that "research findings must be translated into propositions for practice"; two, that teachers interpret the findings with reference to "their own circumstances" and from their own conceptual frameworks; and three, the presentation of the findings need to be applicable for effective practice.

The conclusions drawn have been highlighted as "propositions for practice" to reflect the intent of this research study: To illuminate the significant features about teacher interactions with colleagues and the community in collaborative action research for curriculum in change.

Propositions for Practice

<u>A Response to Research Question One</u>

The formation of a Professional Support Group for teachers in collaborative action research creates collegial relationships that enhance personal development and enable teachers to develop curriculum, professional learning for professional development. The features of teacher discourse that support the establishment of a Professional Support Group are "commonality of understanding of praxis", "narratives of experience" that personalize praxis, and "tension" in the expression of alternative mind frames. Through this

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"discourse community" collegiality and camaraderie may develop.

The development of curriculum embedded in a context of environmental education is characterized by learning *about* **the environment (traditional praxis) and** *in* **the environment (transitional praxis) as prerequisite experiences for learning** *for* **the environment. Learning experiences** *for* **the environment imply a state of "consciousness of change" and personal dynamic qualities for change.** The state of "consciousness of change" is characterized by: willingness to change, agreement of knowledge for and about change, and control of change as in planned action. It is a necessary precursor for change in praxis and a predictor of change in learning experiences.

Curriculum development that reflects principles of education *for* **the environment parallels collaborative action research.** It is an interactive process that unfolds as individuals engage in reflective action in selecting and implementing solutions to meaningful real-life problems.

A Response to Research Question Two

Administrative and advisory support to a Professional Support Group reflects the conditions of that group: goal interdependence, negotiation of mutual responsibilities, active participation, and clear procedures. Satisfying these

conditions suggests that each individual body of support has specific contributions to make to the Professional Support Group that are inclusive of change in organizational structures but exclusive of change in praxis in the classroom.

Institutional support enhances the facilitation of curriculum development through visibility and positive feedback; it may be harmonious with the conditions of the Professional Group. School district personnel displayed active participation in the negotiation of reporting policy waiver and attendance at the Winter Studies Fair; goal interdependence with the Professional Group was mirrored in their support for the locally developed curriculum; clear procedures in the form of "adjusted reporting timelines" were mutually agreed upon.

Support to a Professional Support Group for the facilitation of professional and curriculum development can be a partnership in learning. In the Winter Studies Program the partnership of "home, school, and community" was evolving as teachers in the retrospection-prospection phase of action research planned to refine the curriculum. The "partnership" was compatible with, and supportive to, the curriculum context for environmental education as learning *about*, *in*, and *for* the environment.

"Time" is a crucial feature for the facilitiation of support for professional and curriculum development. "Time" for teachers to meet as a community of discourse is provision for collaboration, collegiality, and reflection in action research. Sufficient "time" to administer a program without overload necessitates planned action and pacing. "Time" is a determinant of the variety of learning experiences *in* and *for* the environment that can be presented. The effective management of "time" for team meeting discourse can maintain group cohesiveness.

The context within which curriculum is conceptualized and developed is all important: Provision for the organizational structures that need to be in place *before* implementation are crucial for curriculum to be actualized. Multiage grouping for the reorganization of classrooms into consistent formations (such as four grade 6/7 classrooms) was necessary *prior* to the development of the Winter Studies Program. Flexible timetabling emerged from this reorganization. Both of these structures created conditions within which support for change in curriculum and change in praxis was made possible.

Conditions of political, economic, and socio-cultural organizational structures may emerge as precursors of support to change through collaborative action research. In the Winter Studies Program the condition of the "Demonstration

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for Celebration" was both a political and socio-cultural structure for support to change in "traditional" reporting: in the political context it was a condition of accountability for teachers, students, supporters, and the community; in the socio-cultural context it was a condition for partnership in learning.

A Response to Research Question Three

Collaborative reflection enables a Professional Support Group to incorporate *theory* with praxis in the creation of curriculum content. The research of Baird (1992) contends that the improvement in praxis seems to be supported by effort in seeking a "balance" between research and teaching and that this is facilitated by purposeful reflection in collaboration "among members of a group".

The retrospection-prospection dialectic in teacher discourse mirrors discrepancy in *theory* with praxis. When teachers voice discontent with their praxis in a collegial context "collaborative piggybacking" emerges as a collective effort to understand, and/or rationalize, the dissonance.

Negative reappraisal as retrospection in teacher discourse appears to create tension that propels discourse into prospection, reflection for planned change. This feature of tension parallels the tension created through the articulation of alternative mind frames in teacher discourse.

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While the latter exemplifies humor as tension relief in discourse, tension in negative reappraisal is relieved through the generation of ideas, brainstorming, for planned action.

The retrospection-prospection dialectic enables individuals to develop their state of "consciousness of change" for change in praxis. Critical self-reflection was a process that enabled the researcher to reflect on research praxis and to come to some appreciation of the actions and beliefs that may have jeopardized the collegial relationship of the researcher and teacher, and provoked planned change in that praxis.

Action research serves as an appropriate methodology within which to develop curriculm. It is impossible to know "how implementation will proceed in detail from the beginning nor could such knowledge be drived a priori" (Reeves,1991,p.23). The development of a curriculum for the Winter Studies Program emerged and evolved through the ongoing interactions of teachers in discourse with their colleagues and curriculum content. It was guided by systematic inquiry and collaborative reflection for improvement in praxis.

Action research is a mechanism for professional development. As teachers interact with colleagues and with content of the emerging curriculum they develop knowledge and skills, and perhaps most significant, they come to appreciate the

intrinsic value of collaborative collegiality that is so highly personalized.

Limitations to the Study

Limitations to the study will be approached from two perspectives: one, limitations to the study of teacher discourse in collaborative action research; two, limitations to researcher praxis.

Limitations to the Study

One of the significant limitations to the study was human variability in willingness to, awareness of the need for, and timing of, change. In the study of teacher discourse in collaborative action research the researcher presented critical social science as a paradigm for educational change. Through collaborative reflective discourse teachers developed a commonality of understanding about their praxis and created opportunities to implement "planned action" for change in the Winter Studies Program. However, "actualization of change" is dependent on the willingness and awareness of the individual to "transform thought" and improve praxis. It is highly personalized and variable. Whether or not change in praxis has, or will have, occurred is a potential dilemma - the situation of verbal agreement not being matched to actions.

Interrupted support from administration and/or advisory personnel was negatively perceived by some team members. In a memo the researcher recorded:

> The principal's role of support to teachers
> implementing change must be ongoing...after
> the initial stages it was very important since
> some members of the team may begin to enter a
> "dip phase". Ongoing monitoring maintains the
> level of high energy required.

In the research of Gunstone (1991) it was reported that teachers "needed support from the researcher to maintain their effort and to reach their goal." During the "member check" one year after this study teachers voiced that the meeting times in the ensuing year of Winter Studies had not been "as effective" in the absence of an "advisory teacher" or "teacher as researcher". They asserted that "someone in charge" had been key to keeping them "on track" in the first year of the program and implied that such a person was crucial to the "agenda set" for time to reflect in teacher team meetings.

Two of the constraints to curriculum implementation were time and pressure. Time frames had been too narrow for complete curriculum content coverage, for coordinated assessment, for reflection book marking, for a variety of "beyond the walls" learning experiences. Lack of explicit curricular links between the Winter Studies Program and Ministry guidelines had added pressure to teachers; they had treated the program as an "add on" rather than as a locally developed curriculum. As Neil explained:

> ...there's an element there where the Winter
> Studies Program is sort of sitting there by
> itself and there's all the rest of the curriculum
> people feel pressure to teach to and there's no
> overlap sometimes, or for people to see it as an
> overlap and it is the curriculum you're teaching...
> it shouldn't be considered as an add on. It's as
> valid part of the year as the rest of it.

Limitations to Researcher Praxis

Researcher inexperience with the research process and the action research cycle hampered effective time management of the stages in each. With regard to the research process, an "appreciation" of the use of the constant comparative method evolved; personal saturation and deadlines infringed on critical self-reflection for memoing near the end of the analysis:

> Deadlines, tedium, and personal saturation of
> interest can be ever present at points to
> provoke skipping or unduly shortening a step
> ...not doing enough memos for a category
> (Glaser,1978,p.16).

The state of "consciousness of change" for researcher implementation of the action research cycle for teacher participation emerged on analysis of the data, "after" the facilitation of the team meetings. Analysis of the researcher's contribution to teacher discourse revealed the concept of redundancy, "a structure, approach, or strategy which may have been appropriate at one stage of the process (that) may actually be an impediment to a later stage of implementation (Reeves,1991, p.20): The use of questioning for reflection on *researcher-*generated topics had slowed the process of discourse near the end of the study; its redundancy had threatened to undermine the collegial relationship between the researcher and teacher. Reeves (1991) states that the researcher needs "to have a good understanding of the change cycle and how to implement it" (Reeves,1991,p.28).

The transformation of data for analysis was a laborious process and although insightful, wearisome and contributory to personal saturation. The transcriptions of approximately twenty-one hours of discourse necessitated corroboration through triangulation with audiotapes and headphones. During tension in discourse overlapping conversation was difficult to distinguish and necessitated eight or nine replays for accurate transformation. The use of headphones clarified pronounciation, particularly for overlapping dialogue. The discourse of six and sometimes seven people in a group encouraged researcher bias; that is, recording what "seemed to fit" but in fact, on replay, was different. The videotape provided the advantage of viewing body language to illuminate speech and speaker. It was a tiring process, and saturation in the data may have limited the scope of coding and categorizing. Still, the media form enabled the researcher to immerse in the data as if "going back in time", providing a reflection on social inquiry. Colorcoding dialogue to categories of team participants proved helpful for sorting during analysis.

The "structural context" of the study may have infringed on collaborative negotiation. Chisholm (1990, p.256) draws attention to the misinterpretation of harmonious cooperation for collaboration: "each element may work harmoniously and productively together, but in parallel rather than in collaboration." The rich description of the analysis is left to the reader to determine whether the work is reflective of

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collaboration or cooperation.

The value attached to this study can only be judged in terms of the "trustworthiness" of the findings of the research inquiry. Confirmability has been limited by the lack of an inquiry audit. The degree to which it may be transferable to another context is highly dependent on the reader's conceptual frameworks and context for interpretation.

Implications for Further Study

What has emerged from this study is some clarification of the roles and responsibilities of the researcher as a supporter to collaborative action research in school change. In agreement with Reeves (1991), the primary responsibilities are: facilitating discourse through effective communication, supporting active participation, and mobilizing resources for the support of change. One of the deficiencies in this research was lack of comparison studies: This study did not contrast the work of other "action researchers" working with group processes in schools within a similar context.

Implication for Research

Teachers need opportunities to engage in training as "teachers as researchers": to familiarize themselves with the action research cycle; to become immersed in the change process for the development of skills necessary to implement change; to develop an "appreciation" of the change process within a variety of contexts.

> As "empowered" professionals, teachers deserve the
> right to apply for paid, sabbatical leaves every
> six years or so...in order to engage in research at
> graduate centers...teachers need time away from direct
> responsibilities of teaching, in order to focus their
> inquiry, reflect, and disseminate their ideas
> (Fosnot,1989,p.137).

As well as training, learning comes from experience. Glaser

(1978,p.16) states that "skill development takes time and cannot

be fully developed in one study." He recommends that the

researcher "look forward to new studies to, say, develop...skills

at memoing". Certainly, networking with other "teachers as

researchers" might be a source of psychological support and an

avneue for professional development (Reeves,1991).

For researchers engaged in collaborative action research

Tobin (1992,p.112) has raised an ethical question for their

contemplation:

> What is the warrant that allows researchers to
> expect teachers to change their epistomologies
> and, hence, to change what they do in classrooms?

Simply framed: "Is it ethical to expect change in praxis?" A

constructivist would answer in the affirmative, since it assumes

that improvement in the quality of learning and teaching is

responsible research. The social critic would agree in light of

the improvement as having an impact of change within school

community structures. Under no circumstance would it be considered

moral to "coerce change" or threaten the present state of teacher

self-esteem.

Implication for Theory

Chisholm (1990,p.256) articulates for researchers the

framework on which to formulate social action inquiry:

> Amidst the rhetoric, which for a variety of
> political reasons, accompanies action rsearch,
> it seems important to be clear about *what* it
> is we are doing and can contribute, *how* we can
> do so, and *why* and *where* the involvement of
> researchers qua researchers is helpful.

The study of teacher discourse in collaborative action

research enabled the researcher to attach value to the

retrospection-prospection dialectic; it can empower individuals to

change their action, or to restructure the organizations affecting

their action. Its quality of critical self-reflection "powers" the

process of change.

> But the undeniable reality is that schools as
> they are currently constituted are not organized
> in ways that promote the development of critical
> self-reflection as a corporate matter (Kemmis,1988,
> p.86).

The research from this study illuminated the frustration of

teachers in the implementation of self-reflection into praxis,

both for students and for themselves.

Implication for Teacher Praxis

Collaborative action research through a Professional Support Group

for change in praxis - for the incorporation of "self-reflective

inquiry" as praxis in the classroom - might ensure long-term

implementation in schools.

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Through this case study of teachers in collaboration for the development of a curriculum for a program of Winter Studies three conditions for Environmental Education have been realized: one, the need for "environmental quality", framed within this study's context as an "educational environment"; two, the need for "motivated, informed and active people" to work for environmental quality; and three, the need for improved methods of teaching to ensure it (Bennett,1977,p.199). The findings of the research suggest that the curriculum framework for environmental education is in place in the Winter Studies Program: the state of "consciousness of change", "meaningful" learning experiences, and personal "dynamic" qualities. To extend its "vision" beyond the local to the global context has far-reaching implications.

Implication for Curriculum

A curriculum for the development of Environmental Education is a curriculum for the sustenance of quality environments, educational and natural. As teachers in the Winter Studies Program model "motivated, informed and active people" working in collaboration for the creation of quality learning experiences; they provide opportunities for students...

> to increasingly identify existing and
> potential environmental issues and problems
> and choose, plan and help carry out solutions
> which place people in the role of stewards
> and creators of a quality environment
> (Bennett,1977,p.199).

Collaborative action research, as a methodology for facilitating curriculum development, was effective. Corey states (1982,p.55), "the value of action research...is determined by the extent to which methods and findings make possible improvements in practice". Evidence of teaching praxis, as reflective of the learning experiences provided, suggests that the teachers were in "transition" from the teacher-directed traditional format of teaching to the transformed state of student-directed learning. As Neil articulated,

> The program wasn't perfect by any means, we got alot of things to do but for the first time through I think it went extremely well.

Teachers were collaboratively reflective on "change" for program extension and refinement: It was to be a program for learning and as well, "a time for play".

Implication for the Winter Studies Program

A number of concerns were raised by the Professional Support Group during reappraisal of the implementation of the Winter Studies Program within its specific educational context. Such issues provide opportunities for further research within the context of the Winter Studies Program:

> How do we motivate students in our school that, "no matter what activity we provide, no matter how structured, we just can't get them to hook in"?

> How do we challenge kids who create contracts that mirror experiences they have already completed?

> How do we prevent alienation of staff members who are not part of the Professional Support Group?

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How do we, as teachers, balance the pressures
- peer pressure, administrative pressure -
from all of these new things coming in, within
a context of "wellness"?

The development and implementation of a curriculum for the

Winter Studies Program was a significant achievement: It mirrored

the potential of any collaborative action research endeavor to

improve teaching praxis, restructure organizations, and embrace

the "challenge of change". The Winter Studies Fair was a community

occasion for "celebration" of that accomplishment; it was the

"joining of hands" for partnership in learning; it symbolized

activating the social and spiritual life
in the community in a continuous search for
self-improvement (Shumsky,1982,p.69).

SYNOPSIS

The "Emergence of the Study" is grounded in the belief that
it is individuals, collectively, who will, in the end, change
their world "by understanding it".

In the global "earth" context, as we are BEcomING
metacognitive of our world's fragile balance, our "reflection on
our action" prompts "reflection for action" to sustain a quality
life through "exercising initiative and accepting responsibility
for the environmental consequences of an act" (Elliott,1991b,
p.27). Parallel to this, in the local "educational" context, as we
are develping our state of "consciousness of change" in the
restructuring of schools, our retrospection on the quality of
education and learning in schools prompts prospection for
opportunities in which individuals assume responsibility for self-
actualization in their development, both personally and
professionally, and collaborate for "living in partnership" with
members of their community.

The study of teacher discourse in collaborative action
research for the development of curriculum for the Winter Studies
Program illuminated how teachers respond to change. Through the
formation of a Professional Support Group emanating an ethos of
camaraderie, teachers displayed a "consciouness of change" for the
development of curricular experiences for students that promoted
education *for* the environment. Organizational restructuring within
a "community of support" enabled action for change. Through

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systematic collaborative inquiry personal "dynamic" qualities emerged; the retrospection-prospection dialectic in discourse reflected a transition in teacher attitudes and praxis.

This research is a case study for collaborative action research as a process for change; it empowers individuals through collaborative reflective inquiry to change their actions or the organizational structures that influence those actions.

> It is teachers who will, in the end,
> change the world of the classroom by
> understanding it.
> (Lawrence Stenhouse)

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Appendix A

LETTER OF TEACHER CONSENT

January 14, 1993

Dear Colleague:

At the present time I am involved in "teacher research" as part of the requirements for my Master's of Arts Degree at the University of British Columbia. The study that is being proposed is titled, "An Inquiry of an Assessment of Children's Investigations in Science: A Collaborative Project". The objective of the project is to record the ways teachers incorporate "hands on" activities in their units of science and to describe how teachers assess what children do during such investigations. Such a study will provide an opportunity for teachers to work collaboratively to utilize "performance assessment" as another tool to discover how children display their understanding of science.

To carry out such a project a small group of intermediate teachers will work collaboratively to plan, implement, and assess "hands on" investigations in science at some point during the 1992-93 school year. This will involve children in an multi-age group setting at the grade 6/7 level. Tentatively, four classroom teachers will be involved as an extension of the _____ School Teacher-Team Planning for integrated learning at the intermediate level. At the present time Curriculum Project Development Funds from School District No.22 are available for five release days for four teachers to meet in order to develop "science performance assessment" materials.

It is important to note that any teacher has the right to refuse to participate at any time. All identities of teachers and children who are involved in the study will remain anonymous and will be kept confidential, since no names will be used in any reports or released to any persons other than the teacher-researcher.

Your contribution to this study is valued and I hope that you will be able to participate.

Sincerely,

KerryLou Arndt

Appendix B

A SAMPLE MEETING AGENDA FORM

Winter Studies Project
Teacher Inquiry: Assessment of Children's Learning in Science

Meeting #3: March 1, 1993
Location: Conference Room [8:30-12:00 Noon]

1. Discussion of Research
   - A. Hein's Article - "Active Assessment for Active Science"
   - B. White et al. Article - "The Importance of Reflection..."
     [Are we still considering some of the questionnaires? modifying any?]
   - C. Swan & Bakopanos Articles - considering criteria for assessing "thinking books" & "questioning"
   - D. Articles re "Benchmarks" & "Learners" - possible pathways for assessing growth in student learning
     [ie. "progression-of-competence" in becoming a self-directed learner in "Winter Studies"]

2. Teacher Reflective Journals
   - A. insights, concerns, ideas ... suggestions for assessment

3. Criteria for Assessment
   - A. teacher assessment of students
   - B. student self-assessment
   - C. portfolios as assessment tools
   - D. exemplars of problemsolving formats: science investigation guidelines, performance evaluation record sheets [viewing videotapes]

4. A "Celebration"
   - A. planning dynamics
   - B. timetable of events:

5. "Ethics" Review Submission
   - A. a need for all teacher consent forms
   - B. parent consent form for release of videotaping to be developed

6. Next Meeting [**date:** _____]
   - A. focus on developing "benchmarks" for problemsolving in Science Investigations from viewing videotapes of student performance
   - B. reviewing Provincial Draft of ProblemSolving Reference Set: a Diagnostic-Prescriptive Tool for Teachers

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Appendix   C

STUDENT   EVALUATION   FORM

OF   THE

WINTER   STUDIES   PROGRAM

Winter Studies Program
Student Evaluation of the Program
by _____

1. What did you learn about Winter Studies over the last eight weeks?

2. What did you learn about "science" through your study of Winter Studies?

3. Consider the Winter Studies Program using the following checklist:

a. How much did you <u>look forward</u> to the Winter Studies activities?

b. How much did you <u>enjoy</u> them?

c. How <u>interesting</u> was the work you did?

d. How <u>hard</u> did you find the work?

e. How much did you <u>understand</u> of what you were doing and why you were doing it?

f. How <u>important</u> is the work you did for you and your future?

g. How much did you <u>think carefully</u> about what you were doing?

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4. Choose the appropriate question to answer:

As a girl do you feel that you had as many opportunities to participate in the activities as boys? [Explain your response by giving examples.]

As a boy do you feel that you had as many opportunities to participate in the activities as girls? [Explain your response by giving example:

5. a. What was the <u>best</u> thing about Winter Studies that you learned?

b. Why do you think this?

6. a. What was the <u>worst</u> thing about Winter Studies that you learned?

b. Why do you think this?

7. a. Do you think you are learning "science" through the Winter Studies Program?

b. Why do you think this? [Explain your response by giving examples.]

Appendix D

THE TEACHER/STUDENT EVALUATION OF PERFORMANCE

A PROGRESSION OF COMPETENCE

Progression of Competence

Skills:
- communication/representation
- KWLH strategy
- organization
- task completion
- problemsolving
- social

Attitudes:
- risk-taking
- interested
- cooperative
- perseverence
- effort

Content:
- learning concepts
- applies understanding [acts on knowledge]
- extends understanding [makes connections]

1. - incomplete representations; inconsistent organization, incomplete tasks; inability to recognize problems; works cooperatively some of the time [with 1 person]
   - not interested; little or no effort; unwilling to risk-take
   - understands little of the content; does not see relevance or links

2. - one type of representation; organization of some work; all work complete; recognizes problems but needs help to identify and solve; works cooperatively most of the time
   - some interest and some effort in some areas; some risk-taking
   - understands some content; sees relevance but cannot apply it

3. - several types of representations; organization of most work; all work complete; identifies problems but needs help to solve them; works cooperatively with others
   - shows interest and effort in most areas; extends risk-taking
   - undersatnds most content; sees relevance and applies it

4. - clear and varied representations; organization of all work; completion of all work; able to identify and solve problems; ability to work cooperatively and effectively with others
   - shows keen interest and effort in all areas; challenges his/her self
   - understands all content; sees relevance; applies & extends to the future

LEVELS OF ACHIEVEMENT IN THE WINTER STUDIES PROGRAM: Focus

Level 1	Level 2	Level 3	Level 4
Content understands little content __ does not see relevance or links __	**Content** understands some content __ sees relevance but cannot apply it __	**Content** understands most content __ sees relevance and applies it __	**Content** understands all content __ sees relevance and applies & extends it to the future __
Skills incomplete representations __ inconsistent organization __ completion of all work __ inability to recognize problems __ works cooperatively some of the time [with one person] __	**Skills** one type of representation __ organization of some work __ completion of all work __ recognizes problems but needs help to identify and solve them __ works cooperatively with others __	**Skills** several types of representations __ organization of most work __ completion of all work __ identifies problems but needs help to solve them __ works cooperatively with others __	**Skills** clear & varied representations __ organization of all work __ completion of all work __ able to identify and solve problems __ able to generate problems to solve __ works cooperatively and effectively with others __
Attitudes not interested __ little or no effort in program __ unwilling to risk-take __	**Attitudes** some interest __ some effort in program parts __ some risk-taking __	**Attitudes** shows interest in most areas __ shows effort in most parts __ extends risk-taking __	**Attitudes** shows keen interest in all areas __ shows effort in all areas __ challenges his/her self __

COMMENTS:

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