IMPLEMENTATION OF CLASSROOM CHANGE AND THE MANAGEMENT OF AMBIGUITY

by

DENIS VICTOR JOSEPH FAFARD

B.Ed., The University of Alberta, 1976

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS

in

THE FACULTY OF GRADUATE STUDIES

(Centre for Study of Curriculum and Instruction)

We accept this thesis as conforming to the required standard

THE UNIVERSITY OF BRITISH COLUMBIA

April 1992

In presenting this thesis in partial fulfilment of the requirements for an advanced degree at the University of British Columbia, I agree that the Library shall make it freely available for reference and study. I further agree that permission for extensive copying of this thesis for scholarly purposes may be granted by the head of my department or by his or her representatives. It is understood that copying or publication of this thesis for financial gain shall not be allowed without my written permission.

(Signature)

Department of _Curriculum and Instruction_, Faculty of Education

The University of British Columbia
Vancouver, Canada

Date _March 31, 1992_

ABSTRACT

Uncertainty characterizes teachers' work as they implement classroom change. They manage this uncertainty or ambiguity by modifying their appreciative systems (i.e., values and beliefs about teaching) and the innovation itself. This argument is made on the basis of selected literature related to the implementation of classroom change and is illustrated through three interviews with each of two teachers during their implementation of cooperative learning over the course of a school year.

The discussion of the literature clarifies a view of implementation around three central concepts - appreciative system, uncertainties, and the management of ambiguity. Interview transcripts were analyzed in terms of these concepts.

It was found that the teachers managed their ambiguities by improvising short-term solutions to immediate implementation problems which were linked to uncertainties endemic to teaching. In doing so, they had to modify their use and understanding of cooperative learning.

Implications for implementation support and further research are discussed.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS

CHAPTER ONE
INTRODUCTION

Ever since the emergence of public schooling in North America, reformers have advocated changes in the way children are taught. And yet, according to Cuban (1982), Goodlad (1984) and others, stability rather than change characterizes classrooms. This lack of change stems in part from the conceptions of implementation held by teachers, administrators, and policymakers. Their conceptions determine what type of knowledge about teaching is seen as valuable, what instructional practices are deemed relevant and what forms of teacher assistance are provided.

Joyce, Showers and Bennett (1987), in their meta-analysis of nearly 200 research studies done during ten years of staff development, conclude that the way teachers conceptualize teaching largely determines what they do during implementation. For those who seek to implement classroom change, this conclusion underlines the importance of understanding how teachers give meaning to their work. As Fullan (1991) points out, one of the reasons for the failure of so many attempts at changing classroom practice is a lack of attention to change as it is understood and actually experienced by teachers.

Until recently, as Donald Schön (1983) has argued, a technical view dominated teaching as well as many other fields of professional practice. One consequence for education was that those who sought to implement classroom changes adopted a technical approach: teachers, viewed primarily as technicians, were expected to put into practice the suggestions provided by researchers, administrators and workshop leaders. Any failure of

1

implementation based on this conception was attributed variously to teacher misunderstanding, sloth, lack of funds, insufficient support personnel, or a host of other "factors."

As an alternative to the narrow conception of teaching as a set of instructional behaviors used by the teacher-technician, there is an emerging view of teaching as a reflective activity engaged in by self-directed professionals. Schön (1983, 1987) contends that a technical view does not adequately describe professional practice for two reasons. First, it does not take into account the fundamental role that values and beliefs play in the work of professionals. Second, such a view does not recognize the uncertainty and ambiguity that characterizes their work. As an alternative, he develops a conception of reflective practice.

Schön's work is useful because it provides us with an alternate conception for understanding what teachers do when they implement change. It is limited, however, in that it does not take into account the social dimension of professional practice. In order to understand the implementation of classroom change we must also consider the unique nature of teachers' work, social context, working conditions and the characteristics of teachers' professional culture. The values and beliefs that professionals use to guide their practice are not held in isolation; they are shaped within the social environment in which professionals work.

An adequate conception of teaching and classroom change must, therefore, take into consideration the social dimension of professional practice. Lortie (1975) provides us with a description of this important dimension. His sociological study examines the working conditions of

teachers and describes the ways they are recruited, socialized and rewarded. Most important for this study, he focusses on the meanings and feelings teachers attach to their work in light of the constraints of school culture.

Lortie's work supports Schön's view that professional practice is characterized by uncertainty. He describes teaching as coping with "endemic uncertainties" and identifies the recurrent problems teachers face. He also emphasizes, as Schön does, the important role teacher reflection plays. He finds, however, that neither teacher training nor the teachers' workplace promotes a reflective attitude towards practice. He further points out that the professional culture of teaching is weak and teachers are often primarily influenced by the models of teaching they were exposed to during their time as students --- thirteen thousand hours before leaving high school. As a consequence, when faced with problems, teachers often fall back on individual recollections and teach the way they were taught. This is due in large part to the isolation from other adults that characterizes their work.

When teaching is examined using a conception of reflective practice based on the work of Schön and Lortie, the type of knowledge about teaching we consider valuable, and the type of assistance we offer to teachers as they undertake changes in their practice, may be quite different from the knowledge and assistance provided when we hold a technical view. The important question for this study, however, is not what knowledge is of value, but how teachers deal with ambiguity during the implementation of classroom change.

3

Purpose

The purpose is to clarify a view of implementation that focusses on how teachers reflectively manage ambiguity during classroom change. The study supports the thesis that teachers manage the ambiguity they experience as they implement classroom change by modifying their appreciative system (i.e., values and beliefs about teaching) and the innovation itself. The argument is made on the basis of selected literature related to the implementation of classroom change (Chapter Two), and interviews with teachers during their implementation of cooperative learning (Chapter Three).

The argument has two parts. In the first part (Chapter Two), concepts are selected from the writings of Schön (1983, 1987), Lortie (1975) and Lampert (1985) in order to clarify the thesis that implementation involves the reflective management of ambiguity. These authors specifically highlight the ambiguity that teachers face when implementing classroom change. The second part of the argument (Chapter Three) is based on interviews with two teachers and serves to clarify further and illustrate the thesis. In particular, the interviews explored the ways they coped with uncertainty and resolved the dilemmas they encountered as they worked with an innovation. Taken together, Chapters Two and Three support the claim that teachers manage ambiguity during the implementation of classroom change by modifying aspects of the innovation and their understanding of it.

The term "ambiguity" has as its root "to wander about," and describes something that is capable of being understood in two or more senses. Thus

ambiguity refers to the way in which a situation is perceived and understood. It has to do with the assigning of value and interpretation. The terms "uncertainty" and "ambiguity" are used interchangeably in this study.

Implementation refers to how teachers actually use an innovation in their classrooms (Fullan, 1991). One way to understand implementation is to examine the developmental stages teachers move through as they learn to use an innovation. Hall and Loucks (1975) developed a "Levels of Use" framework to describe this process. According to them,

> Levels of Use are distinct states that represent observably different types of behavior and patterns of innovation use as exhibited by individuals and groups. These levels characterize a user's development in acquiring new skills and varying use of the innovation. (p. 52)

They found that teachers moved through seven levels of use as they implement classroom innovations. Key "decision points" mark the shift from one level of use to another:

> *Level I Orientation:* The user has recently acquired or is acquiring information about the innovation and/or recently explored or is exploring its values orientation and its demands upon user and user systems.

> *Level II Preparation:* The user is preparing for first use of the innovation.

5

Level III Mechanical Use: the user focusses most effort on the short-term, day-to-day use of the innovation with little time for reflection. Changes in use are made more to meet user needs than client needs. The user is primarily engaged in stepwise attempts to master the tasks required to use the innovations, often resulting in disjointed and superficial use.

Level IV A Routine: Use of the innovation is stabilized. Few if any changes are being made in ongoing use. Little preparation or thought is being given to improving innovation use or its consequences.

Level IV B Refinement: The user varies the use of the innovation to increase the impact on clients within immediate sphere of influence. Variations are based on knowledge of both short and long-term consequences for clients.

Level V Integration: The user is combining own efforts to use the innovation with related activities of colleagues to achieve a collective impact on clients within their common sphere of influence.

Level VI Renewal: The user re-evaluates the quality of use of the innovation, seeks major modifications of, or alternatives to, presents innovation to achieve increased impact on clients, explores new developments in the field, and explores new goals for self and the system.

These stages serve to describe changes in a teacher's understanding and use of an innovation. An individual at any one level may

demonstrate some behaviors characteristic of the preceding or subsequent level.

For the purposes of this study, the discussion of implementation is limited to the second and third stages of implementation: preparation and mechanical use. These typically characterize the first year of a teacher's trying to implement a complex instructional innovation. During the preparation stage, individuals familiarize themselves with the innovation, usually through reading and discussion with colleagues. As they start to use the innovation (Level III, mechanical use), their attempts are often disoriented with management problems being quite common. It is here ambiguities that arise.

Significance

Much of the implementation literature to date is concerned with external factors that influence implementation. Fullan (1991) argues, however, that the most important problem in implementation is meaning. In fact, the "neglect of the phenomenology of change -- that is, how people actually experience change as distinct from how it might have been intended -- is at the heart of the spectacular lack of success of most social reforms." (p.4) The study's significance lies in its focus on how teachers understand and deal with changes they are undertaking.

In order to do so, this study brings together three important topics found in the implementation literature. First, uncertainty and ambiguity play

a significant role during change and implementation (Fullan, 1991; Glickman, 1987; Lampert, 1985; Lieberman, 1984; Lortie, 1975; Marris, 1975; Olson, 1980; Sarason, 1990; Schön, 1971; Simmons and Schuette, 1988). It is clear that implementation is not an event like the transplanting of a tree. Rather, it is a process which, according to Marris (1975), involves loss, anxiety, and struggle. Schön says that change is like "passing through . . . zones of uncertainty . . . the situation of being at sea, of being lost, of confronting more information than you can handle" (p. 12). Fullan (1991) also emphasizes that change often involves the alteration of teachers' sense of competence, and even their self-concept and occupational identity.

Second, teachers' appreciative systems (i.e., expectations, beliefs and values) obviously influence how they interpret and implement innovations (Fullan, 1991; Schön, 1983, 1987; Olson, 1980). Werner (1987) points out that teachers' beliefs about the purposes of schooling, their understanding of the role of teachers and students, and their conception of the nature of learning, shape the direction of classroom change (p.94).

Third, as they implement an innovation teachers modify it (Berman and McLaughlin, 1976; Fullan, 1991; Hall and Loucks, 1977). Teachers implement selectively, retaining those elements that conform to their educational assumptions and the exigencies of their classrooms.

While these three features of implementation are recognized in the literature, nowhere are they brought together as in the thesis of this study. The argument here is that as teachers implement classroom change, they manage ambiguity by modifying their values and beliefs and the innovation.

The remainder of this chapter provides some details about the innovation these two teachers were implementing, describes their background and school context, and outlines the methodology used for collecting data. This information provides a background for reading Chapter Three.

The Innovation

Cooperative learning was chosen as the innovation because it is representative of instructional strategies which require more than the acquisition of a new set of skills. When seeking to implement more complex instructional strategies such as cooperative learning, teachers must re-examine their purposes and expectations. This gives rise to uncertainty. This is quite different from "wait time," "time on task," and similar classroom management strategies (see Fenstermacher (1986) for a discussion of reforms which stem from the view of teachers' knowledge as the exercise of skills) which require little more than the development of a technical mastery of a set of behaviors. Such strategies can be readily incorporated into teachers' present practices and become part of their "bag of tricks."

The form of cooperative learning referred to here is the "Conceptual Approach" developed by Roger and David Johnson (1988). According to the Johnsons, the absence of interdependence, whether cooperative or competitive, results in individualistic efforts in the classroom. In designing the strategies which form the basis of their approach to cooperative learning, they begin with the obvious premise that the way social interdependence is

structured determines how individuals interact within a classroom activity and this, in turn, may affect learning outcomes. They argue that effective cooperative learning is marked by five critical characteristics. If all five are present, there is cooperative learning; if any one attribute is missing, there may be group work, but not necessarily cooperative learning. Their five elements are:

1. Face-to-face Interaction
2. Individual Accountability
3. Cooperative Social Skills
4. Positive Interdependence
5. Group Processing

"Face-to-Face Interaction" describes the physical arrangement of students in small heterogeneous groups. Typically described as "eye-to-eye and knee-to-knee," this arrangement encourages students to help, support and share with each other in pursuing a common learning task. Students are encouraged to engage in the social talk essential for developing understanding of the lesson. "Individual Accountability" ensures that each student is responsible for the success and collaboration of the group in mastering the assigned task. This approach also emphasizes that students must be taught, coached and monitored in the use of those cooperative social skills which enhance group work. "Positive Interdependence" means that all members of the group feel that they "sink or swim together" in achieving their academic goals. In order to create this sense, groups are often structured with each member having a specific role assignment in order to achieve common goals. "Group Processing" involves students in reflection on how

well they worked as a group to complete the task, and identification of those things that can improve their teamwork.

Due to the complexity of this approach, teachers frequently have to reconsider the beliefs and values which guide their practice as they implement cooperative learning. In particular, questions are raised concerning their role and that of their students. Implementation creates fundamental uncertainty as teachers re-examine what they understand by teaching and learning.

This is in keeping with Olson's (1980) findings during his work with the English Schools Councils Integrated Science Project (SCISP) in which he found that uncertainty accompanies the implementation of new instructional strategies. He argues that a useful way of understanding and representing the work of teachers is to focus on their uncertainties.

The Context

A medium-sized urban school district which employs approximately 1000 teachers was the context for interviews with two teachers. In the past few years district staff gave priority to teacher professional development. One of the ways in which they did so was to invite individuals considered to be authorities in a variety of instructional strategies to conduct teacher inservice training. It was only natural, then, that when the school district considered assisting teachers in developing expertise in cooperative learning, they should invite David and Roger Johnson, leaders in the field of cooperative learning.

It is important to note that the district does not favour the one-shot workshop which has been demonstrated to be largely ineffectual, but offers as an alternative a series of workshops interspersed by periods of classroom application. In the case of cooperative learning, a series of three workshops was organized in the hope that teachers would move from theory to practice as they developed familiarity with this strategy.

The first workshop was a three-day session held on Thursday, Friday, and Saturday, October 20, 21 and 22, 1988 at a junior secondary school in the district. The purpose of the workshop was to outline three patterns of social interaction, distinguish cooperative learning from traditional group work, and introduce participants to the five basic elements of cooperative learning. The workshop was given by the Johnson brothers, both of whom teach at the University of Minnesota in the Faculty of Education -- David in the Department of Educational Psychology and Roger in the Department of Curriculum and Instruction. Of the sixty participants in attendance, eighty percent were classroom teachers from within the district. Their teaching assignments ranged from kindergarten through grade twelve. The remaining twenty percent were district administrators, support staff and some teachers from surrounding districts. Attendance at the workshops was voluntary with substitute teachers provided by the school.

During the three days participants were organized in a variety of configurations ranging from individual seating through to groups of six. The Johnsons took turns conducting the workshop which consisted of a whole group lecture format, supported by an array of prepared overheads, and cooperative group activities. The content of the workshop was closely tied to

the manual written by the Johnsons, Cooperation in the Classroom (1988), which the majority of participants purchased. Alternation between lecture and small group activities permitted teachers to develop their understanding of the principles upon which this strategy is based, and to experience the forms of social interaction which comprise this approach.

The second workshop was held Saturday, January 14, 1989 at the same junior secondary school. The presenter was Edythe Johnson Holubec, co-author of the cooperative learning manual, sister of the Johnson brothers, and instructor in the English Department of the University of Texas in Austin. The presentation format was the same as the first workshop. The purpose of the workshop was to review concepts previously presented, introduce some new material and present an array of teacher-developed activities useful in working with cooperative learning. Because this workshop was given on a Saturday, attendance was sixty percent of the original group. (This had also been the case at the previous Saturday workshop given by the Johnsons.)

The third and final workshop was given by Robin Fogarty, a private consultant working for the Centre for Teacher Renewal in Chicago. Interested teachers were again released for this one-day workshop which was given on Tuesday, February 7, 1989. Fogarty shifted the emphasis from organizing instruction based on the use of cooperative groups to designing small group activities which would promote thinking, her argument being that when individuals are confronted by a complex task they must necessarily look to other group members for the human resources required to complete the task. During the one day workshop she provided an overview of principles of

learning and focussed on two instructional activities as models of how cooperative grouping of students could be used to develop thinking. Once again, whole group instruction alternated with teachers participating in the small group activities they were expected to use later with their students.

The overall purpose of the workshop series was to model cooperative learning activities and provide information about this approach. Little consideration was given to how teachers were actually implementing the innovation. None of the presenters anticipated potential areas of difficulty and causes of ambiguity, and no opportunity was provided for teachers to raise questions and discuss their implementation experiences. When implementation was discussed, teachers were encouraged to form support groups at their schools.

The researcher attended all sessions during the five days of workshops. At the time he was working as a grade 6/7 French immersion teacher in the school district, and was using cooperative learning strategies in his classroom.

The Teachers

Two teachers were selected to provide an illustration for the thesis of the study; that is, that teachers manage the ambiguity they experience as they implement classroom change by modifying their appreciative system and the innovation itself. This thesis cannot be clarified only in terms of selected literature (Chapter Two) which describes change in terms of general concepts. The concrete experience of teachers who are implementing classroom change is also needed because it validates and extends the more abstract argument by

illustrating it. For this reason, the thesis rests on a discussion of both literature and the experience of teachers.

The first teacher, Alice, aged twenty-seven, taught grade seven. She served on the professional development committee of the school, and coached basketball and volleyball. Alice's own schooling had been in a private Catholic girl's school, and this proved to be significant in her understanding of cooperative learning and her reasons for using it.

The second teacher, Marcel, aged twenty-six, taught grade six at the same school. He too was a dynamic member of staff; he served as a school representative on the local teachers' association, coached basketball, and was generally very involved in the life of the school. Outside of school, Marcel was completing the requirement for his master's degree in Educational Administration and was very involved in his church.

Selecting two teachers rather than one allows for a comparison of similarities and differences of experience. Such comparison helps the researcher to focus and see more clearly the changes that may be occurring. More than two teachers were not thought to be necessary because this study is clarifying a general thesis rather than making claims about a specific group of teachers. The study is similar to that of Elbaz (1983), who worked with one teacher, and Clandinin (1986), who interviewed two teachers, in order to clarify their arguments about teacher change.

These two teachers were not selected randomly because, as stated earlier, the purpose is not to generalize from their experience to a particular population of teachers. Rather, "purposeful sampling" was employed to select cases appropriate for clarifying and illustrating the thesis in greater detail

(McMillan and Schumacher, 1989: 182-184). They were chosen according to the following criteria.

First, they had to be interested in cooperative learning and committed to implementing it in their classrooms. Obviously, without this condition, it would be difficult to trace how these teachers' appreciative systems are modified, and how the innovation is changed during classroom implementation. Purposeful sampling involved selecting individuals who are "likely to be knowledgeable and informed about the phenomenon of interest" (McMillan and Schumacher 1989: 395). Both teachers demonstrated interest by starting to use cooperative learning in a limited way in their classrooms after attending a one day introductory workshop at their school in the spring of 1987. Also, they were both reading about the strategy to become better informed. Their commitment was confirmed by the fact that they voluntarily attended all the training sessions during the 1988-89 school year, and purchased and read the training manual (Johnson and Johnson, 1988). More importantly, they used cooperative learning on a daily basis in a variety of subject areas with a view to using it for up to sixty percent of instructional time. These teachers were more than merely curious about the innovation; they were serious about implementation.

Second, the teachers were "typical" cases rather than "unique" or "extreme" cases (McMillan and Shumacher, 1989: 184). For purposes of this study, the profile of typical upper-elementary teachers at the beginning of his or her career is as follows: someone who wants to learn about effective teaching strategies, is involved in the extra-curricular activities of the school, voluntarily avails him or herself of professional development opportunities

16

provided outside the school, and becomes professionally active (Lortie, 1975; Goodlad, 1984). Marcel and Alice fit this general profile, and do not represent cynical and uninvolved teachers. In order to strengthen typicality, a male and a female were chosen.

Third, the teachers worked under similar conditions. They both taught upper-elementary early French Immersion classes in the same mid-sized (three hundred students) school in a predominantly middle class neighborhood. These similarities meant that the expectations of administrators and parents, the socio-economic background of students, and the culture of the school were the same for both teachers. Also, both teachers were in their third year of teaching which meant they were at similar stages in their career development.

Fourth, while the researcher did not work in the same school as the teachers in the study, he had worked with both of them on district committees during the previous year and had some understanding of their views on teaching. This understanding provided a common background for quickly establishing rapport, and a larger frame of reference for interpreting the interview transcripts.

Finally, the teachers had to volunteer and their principal had to concur with their involvement in the study. This was a condition laid down by the school district. Both teachers were contacted in September, 1988, and agreed to participate in the study after having been informed about its purpose and methodology.

The Interviews

Data were gathered through interviews because this methodology is best suited to the study's purpose: to understand how teachers manage the ambiguity they experience as they implement classroom change. Since ambiguity does not exist outside of teachers' experiences of making sense of an innovation, interviews are a direct way to uncover teachers' professional appreciative systems, determine their understanding of the innovation, and clarify changes in their appreciative systems and the innovation over time.

Each teacher was interviewed three times. The timing of the first interview was set to coincide with the completion of the "preparation" stage of implementation as defined by Hall And Loucks (1975). The second set of interviews occurred at the beginning of "mechanical" use, whereas the third took place at the end of this stage.

The interviews were done over a nine month period beginning in October 1988 and ending in June 1989. Each of the six interviews was at least 45 minutes in length. All interviews were conducted either before or after school so there would be adequate time for discussion and elaboration. Care was taken to find a quiet location, either in a conference room or the library, so that the interviews were uninterrupted and free of distraction. Each interview was guided by, but not limited to, a series of previously prepared general questions (see Appendices A, B, and C). These were designed to focus rather than limit the discussion.

The initial interviews were conducted in the week prior to the first workshops. Alice's took place on October 18, at 7:30 in the library at the school

where she taught. Marcel's took place on the following day, October 19, at 3:30 in the conference room of the school. The researcher began with the questions found in Appendix A and sought more detailed clarification and elaboration.

These first interviews corresponded with the end of the "preparation" stage as described by the "Levels of Use" framework. The teachers had informed themselves about the innovation during an introductory workshop on cooperative learning held at their school in May, 1988, had used it to design a few classroom activities in June and were seeking more information by reading books and articles. The goal of the first interviews was to gather baseline information about the teachers' initial understandings of the innovation, and define their appreciative systems in terms of the reasons they had for wanting to implement cooperative learning. Such information was necessary for recognizing subsequent changes.

At the time of the second interviews in late November, both teachers had attended the three day workshop provided by Johnson and Johnson, and had begun using the approach in their classrooms. They were entering Level III, "mechanical" use. At this stage users focus most of their effort on day-to-day use, and changes to the innovation are made more to meet user, rather than client, needs (Hall and Loucks, 1975). This description closely corresponds to Alice's and Marcel's experience as represented by the interview data. The second set of interviews was designed to develop a clearer picture of the teachers' understanding of the innovation, further clarify their appreciative systems, and examine some of the problems and concerns (ambiguities) they had as they began to implement classroom change. The

19

interviews took place in the school's conference room at the end of the school day, Marcel's on November 22 and Alice's on November 24.

These interviews had two parts. During the first part, each of the teachers was asked to react to a transcript of his or her prior interview. In particular, they were invited to comment on any aspects which seemed unclear or on which they wanted to elaborate. They both received the transcript two weeks earlier so they could have sufficient time to read and reflect. This strategy provided evidence of changes (from the time of the first interview) in the teachers' appreciative systems. For example, during the initial interview they were asked to make explicit the purposes, expectations and beliefs they held vis à vis cooperative learning. In the interval between the first and second interviews, they attended the first workshop and began to implement the approach, which meant they had made the transition from the preparation stage to the beginning of mechanical use. As each teacher reacted to the transcript of the first interview, he or she could give some indication of changes in purposes, expectations and beliefs (i.e., appreciative system).

This strategy was also used to clarify and validate the researcher's interpretations of what the teachers said during the first interview. This form of corroboration enhances the internal validity of the study; that is, the extent to which the researcher can have confidence that he is understanding the interviewees' perspectives.

During the second part of the interview, the researcher asked questions based on the analysis of a typed transcript of the first interview. Transcripts were read a number of times in order to identify comments and themes

20

related to the central concepts -- appreciative system, uncertainties, management of ambiguity -- discussed in Chapter Two. The intention was to develop questions that would help the researcher understand how these teachers managed ambiguity during the preparation phase of implementation by making changes to their appreciative systems (i.e., values and beliefs about teaching) and to cooperative learning. These questions are found in Appendix B, and were used to focus the discussion.

The third interviews took place at the end of the school year, so as to follow the two remaining workshops and provide the teachers with an extended period of time to implement the strategy. Both teachers were at the completion of Level III, mechanical use; they understood the short- and long-term requirements of the strategy but were not yet able to use the innovation with a minimum effort. The purpose of these final interviews was to determine if they had made substantive changes to their appreciative systems and the innovation. Alice's interview was held on the morning of June 13 at the school. Marcel's took place after school on June 23 at the researcher's home.

Parts one and two of these interviews were structured in the same way they had been in the second set of interviews; the teachers were asked to react to the typed transcripts of the previous interview and then elaborate on problems and issues they were encountering. The third part of the interview consisted of questions designed to have the teachers evaluate their progress in implementing cooperative learning, and identify the challenges they felt they faced. Once again, these questions were designed to help the researcher identify changes to the innovation and appreciative systems.

The six transcripts were analyzed inductively at two levels of abstraction as presented in Chapter Three. The first level provides separate descriptions of Marcel's and Alice's appreciative systems through an examination of why he or she chose to use cooperative learning, and an examination of changes each teacher made to his or her appreciative system and the innovation. The second level compares the teachers in order to identify similarities and differences, and describes how many of the same questions and issues created ambiguity for them.

It is important to note that the purpose of the interviews was to illustrate and clarify further the conception of implementation developed in Chapter Two and demonstrate how this conception can be applied to understanding the experience of teachers as they implement classroom change. If the interviews had been designed to develop or test hypotheses, a greater number of teachers would have been selected for intensive study. The degree to which the study can be generalized is limited by the small sample used to provide the illustration. It is also limited by the selected innovation (the type of change shapes the kinds of ambiguities and problems encountered), the fact that both teachers were at the beginning of their career (it is likely that the ambiguities encountered, and the manner in which they are dealt with, are influenced by a teacher's experience), and the particular characteristics of the French-Immersion program. A methodological limitation is imposed by the frequency of the interviews. The researcher recognizes that more frequent interviews during the January to June stage of mechanical use of the innovation may have been useful for collecting data

about changes as they occurred. The data do provide snapshots at three stages, but not the intervening process.

Summary

Chapter One starts from the premise that the conception of teaching held by teachers, administrators and policymakers determines what type of knowledge about teaching is seen as valuable, what instructional practices are deemed relevant, and what forms of assistance are provided to teachers as they implement classroom change. It argues that to gain a better understanding of how teachers implement classroom change we must recognize the uncertainty that characterizes their work, and take into account the role that values and beliefs play in managing ambiguity. The thesis clarified in the next two chapters is that teachers, when implementing classroom change, manage ambiguity through modifying the innovation and their own beliefs about it.

Chapter Two has two aims. The first is to establish a context for the study by arguing that changing conceptions of teaching have determined the type of support provided for teachers as they undertook classroom change. The second is to discuss a conception of implementation as a reflective management of ambiguity, based on selected writings of Schön (1983, 1987), Lortie (1975) and Lampert (1985). Chapter Three illustrates and clarifies further this conception by examining the experience of two teachers as they implemented cooperative learning. Finally, Chapter Four raises implications

23

for the implementation of classroom change, and makes recommendations for further research.

CHAPTER TWO
THE MANAGEMENT OF AMBIGUITY

As teachers deal with classroom change, they encounter ambiguity about how to solve problems related to ends and means. Part and parcel of their work is the need to manage this uncertainty. This chapter clarifies the claim that implementation includes the reflective management of ambiguity, and suggests that this claim is useful for understanding how teachers implement changes in their classrooms. It assumes that implementation difficulties may stem in part from inadequate conceptions of implementation held by teachers when they deal with classroom change, and by those who attempt to support teachers in change.

The argument presented here is based on the work of Donald Schön (1983, 1987), Dan Lortie (1975) and Magdalene Lampert (1985, 1986). These three authors were selected because they provide insight into how teachers understand and deal with the uncertainty encountered during the process of implementing innovations. Schön argues that teachers use their "appreciative system" to frame and reflect on classroom problems and solutions. Lortie describes the "endemic uncertainties" that underlie any teacher's attempt to understand and solve classroom problems. Lampert introduces the idea that teachers often bring multiple roles and sometimes contradictory aims to their work. As a result, they cannot "solve" many of the problems they encounter, and must learn to "manage" the ambiguity they experience.

The first part of the chapter - entitled "Changing Views of Professional Knowledge" - provides a short overview of four conceptions of professional knowledge and identifies how they are inadequate for understanding implementation of classroom change. While this section is brief, it provides a necessary backdrop for the second part of the chapter, "Implementation as the Reflective Management of Ambiguity."

Changing Views of Professional Knowledge

This section describes four views of professional knowledge: vocational, technical, decision-making and personal practical knowledge. Each view is described in terms of its influence on the way classroom change is attempted.

The Vocational View

Before 1960, a vocational conception dominated thinking about teaching practice and change. Teaching was considered a calling, in the sense of "a summons or strong inclination to a particular state or course of action" (Webster's, 1974). Being a good teacher was synonymous with being a "good person" -- one who could model social virtues and inspire young people. The existence of any specialized pedagogical knowledge was considered to be minimal. What preparation there was focussed primarily on developing the teacher's knowledge of subject matter. Even with increasing requirements of high school graduation, normal school and, finally, university training, the

26

aim remained essentially the same -- to ensure that teachers had adequate mastery of curriculum content as defined and organized within school textbooks.

Since teachers were held to be "born, not made," there was little concern with how the actual teaching of content was to be conducted. The pedagogical knowledge required to teach was thought to be somehow inherent in the personality of the practitioner. Consequently, the problem of how to change instructional practice, if considered at all, was a perplexing one since it required to some extent the alteration of personal characteristics. As a result, exhortation became the preferred mode of seeking to improve instructional practice. Teachers, like their charges, were told how they should behave and were expected to comply. To suggest that a policy or approach was, or should be, subject to wide-spread interpretation would simply not have made sense.

With the increasing application of research methods and findings from the social sciences, such as the appearance of Ryan's <u>Characteristics of Teachers</u> in 1960, it became clear that there was little systematic relationship between a teacher's personal characteristics and desired student outcomes. As an alternative, the principles and methods of behaviorism were applied to teaching with the expectation that once teachers gained an understanding of various teaching strategies classroom instruction would improve.

The Technical View

The application of the principles and methods of behaviorism to teaching gave rise to a technical view of both instruction and classroom change. It was thought that teaching was best understood as the exercise of a particular set of behaviors or "teaching skills," and that classroom change would occur with the implementation of "best practice."

During the 1960's and 70's the teaching profession, in its constant search for legitimacy, turned to the social sciences and the quantitative methods of research as a source of knowledge. Teachers came to be viewed as skilled performers who engaged in a particular set of behaviors or "teaching skills." The aim of educational research was to isolate and accurately describe teacher behaviors. According to Doyle and Ponder (1975), for example, researchers had

> successfully isolated and described the frequency and patterns of a large number of specific behaviors. It is now possible to describe with some measure of confidence the behaviors teachers exhibit with regard to questioning practices, direct vs. indirect verbal influence, nonverbal communication, pedagogical moves and the logic of teachers' discourse, to name but a few. (p.184)

The answer to the perennial question, "What constitutes good teaching and how can we help teachers become better at what they do?," was to be found in having teachers master the skills identified by researchers. One end result, as Simmons and Schuette (1988, p.19) point out, was that

"instructional behaviors were taught as prescriptive rules for effective practice in compentency-based teacher education programs."

A leading proponent of this point of view is Madeline Hunter who contends that,

> Teaching [is] one of the last professions to emerge from witch-doctoring to become a profession based on a science of human learning, a science that becomes the launching pad for the art of teaching. Only recently has long-established research in learning been translated into cause-effect relationships of use to teachers. Only recently have teachers acquired the skills of using these relationships to accelerate learning. (1984, p.169)

Hunter's use of language such as "cause-effect relationships," "skills," and "accelerated learning," reflects the application of behaviorism in the search for a "science" of teaching. Within this conception, what counts as professional knowledge is information about those teacher behaviors and strategies most likely to lead to increased student achievement.

Simmons and Schuette (1988) characterize this type of knowledge as procedural, that is, as "knowing how." There is no doubt that such knowledge has been of immense value in helping us to understand some aspects of teaching and to improve practice. However, on its own, the portrayal of teaching as the application of a predetermined set of instructional skills was inadequate in dealing with contradictions that sometimes emerged from research findings. This left educators uncertain about which was the "right" behavior to use. For instance, Simmons and Schuette cite research on classroom management which emphasized the importance of a teacher's

"brisk pacing." This finding seemed to contradict other research on "wait time" which recommended that teachers should pause 3-5 seconds after asking a question and before calling on a student, and after responding to a student's response. How were teachers to decide which recommendation was correct? Should they even assume there is one "correct" answer?

The same technical approach that produced an understanding of teaching as the application of a set of instructional skills was used to solve the organizational problems which confronted administrators and policy-makers when they sought classroom change (Fullan, 1991). It was assumed that teaching would improve as practitioners became more effective at using researchers' knowledge to solve classroom problems.

Many of the organizational solutions to the problem of classroom change that used a technical approach were influenced by Tyler's (1949) Basic Principles of Curriculum and Instruction. From his point of view, educational improvement was a problem to be addressed through a continuous process of planning:

> As materials and procedures are developed, they are tried out,
> their results appraised, their inadequacies identified, suggested
> improvements indicated; there is replanning, redevelopment
> and then reappraisal; and in this kind of continuing cycle, it is
> possible for the curriculum and instructional program to be
> continuously improved over the years. (p.123)

For Tyler, bringing about classroom change is an eminently logical process: once instructional goals are clear, the appropriate means can be developed and organized for ensuring goal achievement.

This approach to change has been described by Wise (1977) as "hyperrational." That is, proposed changes are presented rationally from the developer's point of view; sound theory and principles are identified and benefits for students are clearly outlined. When those wishing to implement classroom change adopt this point of view they are often concerned that there be a high degree of fidelity between their version of the change and the teacher's version. Within this conception, classroom change would come about when caring individuals, most of them women, worked diligently to reproduce changes developed by researchers and mandated by policymakers and administrators. In all of this the teacher is viewed as little more than a technician.

According to Schön (1983), this conception presupposes the ability of professionals to analyze problems according to a defined framework and then apply a pre-determined problem solving procedure in order to achieve an agreed-upon goal. When applied to teaching, it is assumed that the planned changes have meaning in themselves, somehow independent of the beliefs, diverse teaching styles, and conditions under which teachers work. Frequently there is a failure to consider the change from the point of view of the teacher; what the change means to him or her, how the change might be effected, what the personal costs are, what extra time and resources are required and what institutional support is available. These aspects of change, vital from the teacher's point of view, are often ignored or given only passing consideration by those advocating change. The result is predictable; stability rather than change characterizes classrooms.

Decision-Making

In an attempt to go beyond the conception of teacher as technician, researchers began investigating teacher thinking. Court (1988) suggests that a systematic study began in about 1970 and has continued along a variety of lines, most notably how teachers develop plans for, and make decisions during, classroom instruction. Using ethnographic and cognitive processing methodologies, researchers such as Dunkin and Biddle (1974), Gage (1978) and other authors in the Third Handbook of Research on Teaching (Wittrock, 1986) described the teacher's role as that of decision-maker. According to Lampert (1985), researchers in the field of teacher thinking and decision-making conceived of the teacher having

> an active role in deciding how to teach; she makes decisions by putting research findings together with the information available in the classroom environment to make choices about what process will produce the desired objectives. (p.192)

Research on teacher thinking demonstrated that the particular context within which a teacher worked, the needs of students, the expectations of administrators and parents, the norms of the school, along with the ability and experience of the teacher, determined what would be taught as well as the instructional strategies used.

Research on teaching as decision-making was limited, however, by the continued dominance of a technical conception of teaching practice. Decision-making was seen as yet another skill, a type of "master skill" with which

teachers needed more practice. This claim that there was such a thing as a decision-making "skill," which could somehow be isolated and taught in the same way we might develop the skill of playing darts, was based on a misunderstanding of both what a skill is and the nature of decision-making.

Court (1988) reminds us that skill is defined as "expertness, practised facility, facility in doing something, dexterity." To say that someone is skilled at drywalling makes sense because there are clear standards for evaluating the degree of skill; a fractured wall is transformed to a greater or lesser degree into a smooth surface. However, when we say that a teacher is a skilled decision-maker, we often lack the necessary standards for evaluating the skillfulness of that endeavor. To speak of decision-making in teaching as a skill which is somehow acquired and used in the absence of standards and purposes is inadequate. For example, a teacher's decision about whether or not to structure activities cooperatively depends on a range of factors which are unequally weighted and may conflict with one another. How much time will be required for students to do an activity cooperatively versus independently? Do students have sufficiently developed group skills to tackle the task? How are students to be assessed in order to gauge their progress and gather marks for reporting? What time of day will the lesson occur, in the morning when students are fresh or at the end of the day before an assembly? How much time is available to plan the lesson so that it can be structured cooperatively? Do the materials and textbooks that students have to work with lend themselves to cooperative use? What type of cooperative learning would be best: pairs or threes, jigsaw or single group? What is the energy level of the teacher? This sampling of the kinds of decisions a teacher must make in

planning to use cooperative learning suggests that a teacher's decisions are bound inextricably with his or her values and beliefs about teaching and learning. Further, these beliefs and values are supported or constrained by the circumstances within which teachers find themselves at the moment a decision must be made.

In summary, investigation into teacher decision-making enhanced understanding of teachers' knowledge by going beyond the technical "knowing that" and "knowing how," to include "knowing when and why to do what." Joyce and Showers (1983) describe this last type of knowledge as a teacher's "executive control" of a teaching strategy. On its own, knowledge of the steps required to perform a new strategy is insufficient. Teachers must also know when it is appropriate to use the strategy. As well, they must be able to modify it to meet the needs of their students and the constraints of the curriculum they are using.

However, while research on decision-making increased our understanding of various kinds of knowledge used in teaching and in implementing classroom change, it was not particularly useful in helping teachers actually make changes to their practice. When teachers make decisions, the alternatives are often not completely clear and, even when they are, the consequences of a particular decisions are often difficult to determine in advance. The problems they face have little objective existence "out there" and are not waiting to be discovered like mushrooms in the woods. Since the identification of problems and generation of solutions are emeshed with the values and beliefs of teachers, researchers began to examine more closely how teachers used their values and beliefs to guide practice.

Practical Knowledge

Research on teacher decision-making as well as the work of Sarason (1971), Lortie (1975), Goodlad (1984) and Fullan (1982, 1991) demonstrated that teaching is much more than the dispassionate application of technique or the exercise of a set of skills. The work of teachers is shaped by the social context in which they find themselves and the values and beliefs they hold. As some researchers began to examine the role that values and beliefs play in teaching, a body of literature emerged that focussed on "practical knowledge."

Sternberg and Caruso (1985) define practical knowledge as procedural information that is useful in one's everyday life, largely acquired by doing, and sometimes either unavailable or inaccessible to conscious introspection (p.134, 143). Research into practical knowledge thus examines the "know-how" of teachers and examines how their values and beliefs are expressed through action. According to Hargreaves (1979),

> Values are embedded in classroom practice; but because there is no simple correspondence between 'abstract' values and everyday practice, it is a research task to analyze precisely how values are, often tacitly, embedded in action. Here is the significance of classroom decision-making, for it is in decision-making that all these features find their point of articulation. (p.80)

Researchers working in the area of practical knowledge set themselves the task of analyzing how values were embedded in action.

35

One of the first to do so was Schwab (1973). He stresses that the field of curriculum is practical, "concerned with choice and action." What theory overlooks, he contends, are the irregularities that are endemic to the day-to-day practice of teaching. Schwab metaphorically describes the unique, problematic events in teaching as "potholes" in the otherwise smooth highway of theory. To navigate their way around these potholes, teachers use their values and beliefs. (As we shall see later in Chapter Three, it is the potholes that are of particular importance when we try to understand how teachers make changes in practice. In fact, during change, potholes predominate. Lortie's (1974) portrayal of teaching as managing endemic uncertainties and Schön's (1987) discussion of zones of uncertainty help us see that the problematic is anything but an aberration. In fact, the ability of teachers to recognize and handle the problematic is what defines their professionalism.)

Michael Connelly (1982), one of Schwab's early associates, extended the concept of practical knowledge to include the ways teachers change and implement curriculum. He viewed the teacher as a "user-developer" of curriculum; in dealing with theory teachers "attempt to personalize and make "practical" theoretical ideas" (p.197). The introduction of "personalization" into the discussion of teaching is significant because it permits us to talk about the pivotal role teacher's personal beliefs and values play.

Freema Elbaz (1981), a graduate student of Connelly, developed a fuller conception of "personal practical knowledge" in her work. Using observations and open-ended interviews in her study of Sarah, a secondary

English teacher, she argued that, because practical knowledge is personal, any attempt to describe such knowledge must be done from the perspective of the person under study. This perspective "encompasses not only intellectual belief, but also perception, feeling, values, purpose and commitment" (p.17). Her work marked an important shift. Teachers' knowledge, generally viewed as having an external source and being objective, was now described as personal and subjective.

When Elbaz turned her attention to the content of practical knowledge, she formulated three categories. The first category of knowledge included specific rules of practice. These are brief, clearly formulated statements of what to do or how to do it in particular situations. For example, some of Sarah's concrete rules of practice were to listen actively to students, to paraphrase, and to encourage students to paraphrase. Rules of practice are a way of identifying the important role that instructional routines play in teaching. The second category includes more general practical principles which order rules of practice. They provide a rationale for a teacher's actions and as such express professional values and beliefs. An example of a general principle held by Sarah was that students should be provided with a class atmosphere in which they are able to take risks and thereby come to communicate more openly. The final category is that of overarching images where "the teacher's feelings, values, needs and beliefs combine as she formulates brief metaphoric statements of how teaching should be, and marshals experience, theoretical knowledge and school folklore to give substance to these images" (p.61). Elbaz cites Sarah's statement that she wanted to "have a window onto the kids and what they're thinking" (p.62) as

an example of image. According to Elbaz, images permitted Sarah to order her thinking and extend her knowledge in an intuitive manner.

Clandinin (1986) went on to further develop the idea of image as central to a teacher's personal practical knowledge. She argued that the images teachers use to guide their practice also include a moral and emotional dimension. She contends that an "image links a person's educational life and his/her personal private life" (p.131). As an example, she provides us with the image of the "classroom as a home" that one of the teachers in her study used. She claims that teachers' values and beliefs, which are often charged with emotion, guide their actions.

In summary, the study of personal practical knowledge attempted to describe the subjective world of teachers and identified the important role of values and beliefs in their work. However, the description of personal practical knowledge in terms of "orientations," "perspectives," "principles," and "images," tends to mystify the activity of teaching. Further, while it is clear that values and beliefs underlie the work of teachers, it remains unclear how they are used and affected during classroom change. Fullan (1991) reminds us that "ultimately the transformation of subjective realities is the essence of change" (p. 36), and this involves an alteration of the values and beliefs an individual holds.

The first part of this chapter provided a brief overview of four conceptions of professional knowledge and suggests how they are inadequate in helping us understand implementation of classroom change. There is a shift across these four views of teaching away from an "objective" technical

activity where teachers are viewed primarily as technicians, to an increasing appreciation of the important role teachers' values and beliefs play in their work. This shift in emphasis helps us better understand the role of the teacher in classroom change, and how the teacher deals with ambiguity.

Implementation as the Reflective Management of Ambiguity

The purpose of the second part of the chapter is to clarify a view of implementation that focusses on the teacher's reflective management of ambiguity. This conception takes into consideration the way teachers use their values and beliefs in their work and, as a result, provides us with a way of thinking about how change is effected by teachers and how they can be supported. Further clarification and illustration of this conception will then be provided in Chapter Three.

The conception developed here incorporates three central notions. The first, taken from the work of Donald Schön (1983, 1987), is that of a teacher's "appreciative system" which he or she uses to reflect on practice. Schön's description of an appreciative system emphasizes the role that personal and professional theories, knowledge and values play in helping professionals manage the ambiguity that underlies their work.

The second notion is that of "endemic uncertainties." Dan Lortie (1975) uses this term to describe the dilemmas and ambiguity which characterize the work of teachers.

The third notion, based on the work of Magdalene Lampert, (1985, 1986) is that of "managing ambiguity." Teachers use the values and beliefs

that constitute their appreciative system to manage the ambiguity and conflict they accept as part of their work. Management of ambiguities that arise during the implementation of a classroom innovation occurs in two ways: teachers may change their appreciative system to some extent, as well as the innovation itself.

Appreciative System

Donald Schön (1983, 1987) provides a foundation for a conception of implementation as a reflective management of ambiguity. Central to his work are the notions of reflection and appreciative system.

That reflection is an important part of teaching and the implementation of change is not new (Dewey, 1933). However, until Schön began to emphasize reflective practice, there were few researchers and practitioners who used the term. He argued that much of our current understanding of professional practice is inadequate because it does not recognize the fundamental role that values and beliefs play, nor does it allow for the uncertainty and ambiguity which characterize the work of professionals. As an alternative, he developed a conception of reflective professional practice based on his examination of the ways a variety of professionals (town planners, social workers, architects and teachers) actually do their work. What he found was that professionals rarely solve problems using a technical approach based on first analyzing problems according to a defined framework, and then applying a pre-determined problem-solving

procedure in order to achieve an agreed-upon goal. Rather, they engage in what he termed "reflective practice." That is, professionals,

> deal often with uncertainty, uniqueness, and conflict. The nonroutine situations of practice are at least partly indeterminate and must somehow be made coherent. Skillful practitioners learn to conduct frame experiments in which they impose a kind of coherence on messy situations and thereby discover consequences and implications of their chosen frames. From time to time, their efforts to give order to a situation provoke unexpected outcomes -- "back talk" that gives the situation new meaning. They listen and reframe the problem. It is this ensemble of problem framing, on-the-spot experiment, detection of consequences and implications, back talk and response to back talk, that constitutes a reflective conversation with the materials of a situation -- the design-like artistry of professional practice. (1983, pp.157-158)

Essentially Schön is saying that professionals begin with a hypothesis ("frame") that enables them to define the problem and develop a potential solution. They then take action ("on-the-spot experiment") and remain constantly open to unexpected outcomes ("back-talk") in order to modify their hypotheses and actions.

In order to better describe what professionals do, Schön proposed that we consider their work as a form of artistry. He used the term artist in a particular sense. For him, describing professionals as artists is to characterize them as "practitioners unusually adept at handling situations of uncertainty, uniqueness and conflict" (1983, p.16). This stands in contrast with the teacher as technician described earlier who applies a specified body of knowledge to a

certain set of well-defined problems. This distinction between a technical and artistic conception of practice has significant implications for the implementation of instructional strategies. As I have argued, viewed from a technical point of view, implementation involves the acquisition of a set body of knowledge and its application. Viewed artistically, implementation requires teachers to develop flexibility in the use of the new strategy. In order to develop the "executive control" described by Joyce and Showers (1983) teachers must become able to use the strategy in "situations of uncertainty, uniqueness and conflict" (Schön, 1983, p.16).

According to Schön, a professional's ability to act artistically is based in large part on his or her use of an appreciative system (1987, p.25). An appreciative system is the combination of personal and professional theories, knowledge and values that guide an individual's practice. This system determines what is noticed and, therefore, how a situation is initially defined. It shapes the questions teachers ask, the decisions they make, and how the results of those decisions and the actions that follow from them are interpreted.

Schön reminds us that problems do not exist as entities "out there" waiting to be "found." Rather, they are perceived and defined according to one's values and beliefs (i.e., appreciative system). Problem framing is the professional's ability to define and solve problems using his or her appreciative system. One does not "fix" problems in the same way as one uses glue to repair broken crockery. What counts as problems worth noticing, and as adequate solutions, depends upon the teacher's expectations and standards that are used to understand the situation. Even the significance of the

42

outcome of a solution depends in large part on a professional's values and beliefs.

One of the difficulties we face when trying to describe and understand an individual's appreciative system is that some of the values and beliefs which underlie practice are tacitly held. Some of what we are able to do, whether it is riding a bike, juggling, teaching an art lesson, dealing with a discipline problem or planning a unit of study, involves a complexity of thought which we normally do not, and need not, be aware of. This is the tacit dimension, the realm of "non-logical processes," "the skillful judgments, decisions, and actions we undertake spontaneously, without being able to state the rules or procedures to follow" (Chester Bernard quoted by Schön, 1986, p.24). This type of knowledge is described as *knowing-in-action*, where the knowing is demonstrated *in* the action. Often we are unable to explain very well why we did what we did or how we were able to do it. Sponsor teachers working with student teachers often find themselves in this situation. Somehow, they simply can teach well without being able to explain how. It just seems to happen.

This is not to say that we can never formulate this knowledge. We can and do. Schön pointed out that

> Our descriptions are of different kinds, depending on our purposes and the languages of description available to us. We may refer, for example, to the sequences of operations and procedures we execute; the clues we observe and rules we follow; or the values, strategies, and assumptions that make up our 'theories' of action. (1987, p.25)

While many aspects of a teacher's appreciative system may be held tacitly, we can begin to understand it by observing the teacher's actions and, more importantly, discussing the significance he or she ascribes to those actions. An appreciative system is expressed through the way he or she first perceives or fails to perceive a situation, what action is taken in reponse, and finally how the results of that action are interpreted. (The purpose of Chapter Three is to describe the appreciative systems of two teachers in relation to cooperative learning, and how both the strategy and their appreciative systems were altered in the process of dealing with ambiguity.)

Another significant feature of the "artistry of professional practice" is the role that surprise and uncertainty play. These are the "potholes" Schwab (1969) described. Reflective practice requires that "the practitioner allow himself to experience surprise, puzzlement, or confusion in a situation which he finds uncertain or unique" (Schön, 1983, p.68). These episodes stimulate what Schön calls reflection-on-action. In such situations teachers must reflect *on* action. This involves thinking back over what has occurred in order to examine both the situation and the values and beliefs that underlay the actions taken.

When implementing complex instructional strategies, teachers deliberately put themselves in a non-routine situation which lacks coherence, and there are numerous occasions for surprise. The lesson may produce unanticipated outcomes, students may draw different conclusions or may provide unanticipated responses, the new strategy inevitably seems to unfold unlike the demonstrated version. A reflective practice premised on artistry does not seek to ignore or eliminate such events. Rather, these episodes are

valued as potentially rich sources of information about the assumptions the teacher is using to understand the situation. It is in these moments that there is an opportunity for learning, change and professional growth, and those who persist in their attempts to develop a new coherence modify the strategy and/or their appreciative system in order to achieve greater harmony between their beliefs and values and what is actually happening in their classroom.

In summary, Schön argues that professionals perceive, define and solve problems according to a set of beliefs and assumptions (or appreciative system) particular to themselves and their profession. Further, their appreciative system enables them to "engage in the artistry of professional practice," that is, to recognize and accommodate the uncertainty and ambiguity which characterizes their work.

Endemic Uncertainties

While Schön's description of reflective practice is useful in helping us understand teachers' work in a general way, it is limited because it tends to consider the internal world of individual teachers while ignoring the social setting which influences much of what they do. Lortie (1975) brings a broader social perspective to understanding the nature of teaching practice by emphasizing its social nature. As a sociologist, he examined the work of teachers in relation to school cultures, and described the ways they are recruited, socialized and rewarded. Most important for this study, he focussed on the meanings and feeling teachers attach to their work, and described

those aspects of the craft of teaching that make the realization of goals such as cooperation so difficult. These characteristics must be taken into consideration if we are to understand the implementation of classroom change such as cooperative learning.

Lortie argues that the work of teachers is characterized by endemic uncertainties concerning recurrent problems. Two problems in particular, the attainment of instructional goals and appropriate relationships with students, are important for helping us understand the ambiguities that teachers face as they implement classroom changes such as cooperative learning.

Attainment of instructional goals

When using cooperative learning, teachers try to change student attitudes and behaviors in order to have them work cooperatively. Achieving this goal may prove to be very difficult. This is to be expected since, as Lortie pointed out,

> We find that the goals sought by teachers cannot be routinely realized. Their ideals are difficult and demanding: exerting moral influence, "soldering" students to learning, and achieving general impact presume great capacity to penetrate and alter the consciousness of students. Although our knowledge of interpersonal influence leaves much to be desired, we do know that it is extremely difficult to alter the outlook and behavior of others. When such change must be effected with people whose participation is at least in part involuntary, the difficulty increases. (p.133)

It follows that teachers often find it difficult to determine how effective or successful they are in attaining the goals they set for themselves. Like all craftspeople they "must adjust and readjust their actions in line with hoped-for outcomes; they must monitor their steps and make corrections as they proceed" (p.135). However, it is difficult to assess the quality of the "products" they seek to create for a number of reasons.

The first is that there is an absence of concrete and reliable models that can serve as guides for comparing intermediate outcomes with the long term goals. For instance, there are no blueprints, plans or detailed specifications for such vague goals as "becoming a cooperative member of society."

The second is that lines of influence are unclear. It is difficult for teachers to identify and assess the quality of their contribution to the overall education of a student, especially as they are normally only one of the significant adults that influences a child.

The third has to do with ambiguity about assessment timing. Teachers work with maturing children who keep changing after they are taught. As a result, it is difficult to determine when, if ever, a teaching outcome has been attained. This is particularly true when teachers try to develop students' ability to work cooperatively.

The final reason it is difficult for teachers to determine their effectiveness is that criteria for assessing success are multiple and sometimes controversial; this leads to considerable ambiguity when a teacher is implementing a classroom change. In some crafts the service or product is assessed in the light of a single, major purpose. A lawyer wins or loses a case; an engineer's bridge bears the specified weight or it does not. Teaching acts,

however, are normally assessed in terms of multiple criteria applied simultaneously: Was the amount of content covered adequate? Did students develop some understanding of the topic? Was the classroom management effective? Are students assisted in their social, emotional, aesthetic, physical, as well as academic, development?

The difficulty teachers have in determining how effective or successful they are on a day-to-day basis is exacerbated when they seek to implement classroom changes aimed at developing attitudes or dispositions such as cooperation. As a result teachers experience even greater uncertainty. Where are the concrete models of the "cooperative student" they can emulate and measure their efforts against? What effect can they realistically have on the development of a student's ability to cooperate given the relatively short time spent with any one student? The ability of a teacher to manage such uncertainty is likely to determine their success in implementing classroom change. How these uncertainties are defined and dealt with depends in part upon the teacher's appreciative system.

Appropriate relationships with students

In addition to the difficulties they face in determining their effectiveness and success, Lortie argued that public school teachers work under special conditions which include a low degree of voluntarism in the teacher-student relationship, the problem of extracting work from immature workers, and the group context of classroom endeavors. As a result, teachers

48

must assume a variety of roles which may at times be in conflict with one another.

The absence of voluntarism in the teacher-student relationship means that neither party brings pre-existing bonds to the relationship. As a result, teachers are obliged to create relationships that will not merely ensure compliance but will also generate effort and interest in learning. Not only are students conscripts, but they are in the process of learning how to work. Students go to school in part to learn how to work and it is the teacher's role to assist them in learning to do so. A final role obligation teachers face is that their goals must be met and relationships managed in a group context. Since teachers cannot establish entirely distinct and separate working contracts with each student, "they establish general rules for class conduct and find it necessary to discipline deviation from those rules" (p.137).

As if their role was not complex enough, teachers' work is further complicated by a tension that exists between two kinds of leadership they are required to demonstrate: getting group tasks accomplished, and attending to the expressive needs of individuals. Expressive needs refer to needs students have to develop their sense of identity, extend social relationships and seek self-esteem. Lortie cites Bales (1956) who argued that "the personal orientations and dispositions needed to keep a group moving toward work goals differ from those involved in satisfying participants' expressive needs" (p.152). For instance, teachers are responsible for ensuring that students are exposed to a pre-determined body of information. To this end they plan lessons, design activities, assess progress and evaluate results. As teachers know all is not smooth sailing and the exercise of such leadership may

conflict with the needs of students to assert and develop themselves as individuals.

Lortie concludes that teachers must develop an acceptable balance between the two competing requirements of satisfying task and expressive concerns. This balance is an expression of their appreciative system since it reflects the relative value placed on each of these aspects of teaching, and whether or not they are seen as conflicting with or enhancing one another.

To summarize, Lortie's work extends Schön's. The uncertainty Schön described is generally of short duration; it lasts as long as the practitioner is working through a problem and tends to be the exception -- note Schön's use of the term "surprise" -- rather than the rule. In contrast, Lortie's description of the teachers' world and the problems they face suggests that uncertainty is endemic -- it cannot be eliminated: "critical, recurrent problems remain unresolved in the daily work of teachers. Uncertainty stalks as they try to determine whether they are influencing students" (p.150).

Teachers have difficulty determining how effective or successful they are on a day-to-day basis due to the uncertainty they experience as they try to define their goals, assess whether or not these goals are attained, establish appropriate relationships with students, and balance the task and leadership demands of their role. This uncertainty is exacerbated when teachers seek to implement classroom changes aimed at developing attitudes or dispositions such as cooperation. The ability of a teacher to cope with uncertainty and manage the ambiguity they experience is likely to determine their success in implementing classroom change.

Managing ambiguity

The common weakness of the views of implementation already described -- particularly the vocational, technical, and decision-making conceptions -- is that they either ignore uncertainty or assume that it can be eliminated. If appropriate personality traits were acquired, if the correct repertoire of instructional strategies were put in place, if decisions were founded on solid research, ambiguity might be controlled. Lortie (1975) and the experience of teachers suggest otherwise. Teachers deal with unclear or even contradictory aims when they implement classroom change, and many of the problems they face are not amenable to simple or pre-packaged "solutions." Since the ability of a teacher to cope with uncertainty and manage the ambiguity he or she experiences is likely to determine his or her success in implementing classroom change, an adequate conception of implementation must take ambiguity into consideration.

As stated in Chapter One, ambiguity has as its root "to wander about," and describes something that is capable of being understood in two or more senses. Thus ambiguity refers to the way in which a situation is perceived and understood. It has to do with the assigning of value and interpretation, and this requires the use of the teacher's appreciative system.

Describing how teachers manage ambiguity forms the basis of the writings of Magdalene Lampert (1985, 1986). Her view of teaching grew out of work with Jeanne Bamburger (1978) and Eleanor Duckworth (1979) and is informed by Shavelson and Stern's (1981) studies on teacher thinking. According to Lampert, since conflict and uncertainty characterize teaching,

teachers learn to manage ambiguity instead of avoiding or even eliminating it. This shift from the elimination to the management of ambiguity has important implications for the ways teachers approach problems of practice and the implementation of change.

Lortie (1975) undertook his examination of the teaching profession as an outsider. His objective was to analyze the work teachers do in order to develop an objective representation. Lampert is also concerned with understanding teachers' work, but she undertakes her examination as an insider. As a teacher, her concern is not so much with the validity of the claim that many of the common pedagogical problems teachers face are unsolvable within a technical approach, but with understanding how teachers cope with the uncertainty that characterizes their work.

Lampert argues that when a teacher considers alternative solutions to a given problem, he or she cannot "hope to arrive at the 'right' alternative in the sense that a theory built on valid and empirical data can be said to be right" (p.181). One of the reasons is that teachers work with multiple roles and aims and there are too many variables and unknowns to control. Nonetheless, they still develop solutions for the problems they encounter and be able to cope with the ambiguity they experience.

Rather than trying to eliminate the ambiguity that characterizes their work (this is impossible to do, given the conditions of teaching as discussed in Lortie), teachers accept and learn to manage it. Managing ambiguity requires a capacity for improvising short-term or immediate workable solutions to longer term uncertainties that do not "go away." For example, when a teacher places students in groups, she may discover that they are inclined to socialize

and to ignore the task set by the teacher. Faced with this immediate problem a number of short-term alternatives are available. She can disband the groups and have students sit individually; although this solves the immediate problem of off-task behavior, this action may be undesirable in the longer term because, without opportunity to actually work together, students may not develop the skills and experience necessary for group work. Alternatively, the teacher could use her physical proximity to monitor a group in order to increase its on-task behavior; this may be impractical, however, if more than one group needs her help. Another solution might be for her to stop group work for a few days in order to teach explicit and specific social skills that are necessary for the functioning of groups; this creates a dilemma because less time is then available for students to work with content.

Faced with the problems associated with these alternatives, none of which may be ideal, the teacher may become frustrated and reject the use of cooperative groups. Whatever she does, she is faced with ambiguity and has to improvise an immediate, short-term plan of action. To manage the ambiguity, she will likely modify her expectations (i.e., appreciative system) and the innovation (i.e., cooperative learning) in forging a solution.

In summary, Lampert recognizes that many of the problems teachers encounter as they implement classroom change are linked to persistent problems of practice. Teachers draw upon their values and beliefs, or appreciative systems, to develop short-term solutions to problems of practice. These solutions may necessitate changes in teachers' appreciative systems and the innovation, as is illustrated in Chapter Three.

Summary

The purpose of this chapter was to show that implementation includes the reflective management of ambiguity. The first part of the chapter argued that the way we conceptualize implementation determines what knowledge is deemed valuable for teachers when they implement changes in their practice, and the type of assistance provided for them. The contributions of "vocational," "technological," "decision-making," and "practical knowledge" understandings of implementation were outlined and their limitations identified. It was found that these conceptions tend to view uncertainties in teaching as either unimportant or as resolvable in some way or another.

In the second part, selected writings of Schön (1983, 1987), Lortie (1975) and Lampert (1985) allow us to focus on implementation as including the reflective management of ambiguity. There are limitations to teachers' control over uncertainty because they often have multiple roles and aims in the classroom. In trying to make defensible decisions, teachers use their appreciative system -- their unique set of professional and personal values and beliefs -- to understand problems and develop solutions during implementation. Recognizing that many perennial problems of practice can never be "solved," teachers accept the fact that solutions must be improvised and are temporary. This requires dealing with ambiguity because problems encountered during implementation inevitably have multiple solutions.

The reflective management of ambiguity helps us better understand the implementation of classroom change. According to Fullan (1991),

implementation occurs as an individual develops his or her own understanding of the innovation in light of a particular context. In the process, they experience ambiguity. Their appreciative systems are the basis for interpreting which features of an innovation are problematic, and what are appropriate solutions. In this process, parts of an innovation may be modified by the teacher, as well as aspects of his or her appreciative system. Ambiguity is thereby managed.

The next chapter further clarifies the thesis that teachers manage the ambiguity they experience as they implement classroom change by modifying their appreciative system and the innovation itself.

CHAPTER THREE
ILLUSTRATION

The purpose of this chapter is to clarify and further illustrate the thesis that implementation involves the reflective management of ambiguity. The interviews which form the basis of the illustration explore how two teachers coped with uncertainty by modifying their appreciative systems and cooperative learning.

The data were gathered during three interviews with each of the teachers. As stated in Chapter One, these interviews were timed to coincide with two different "Levels of Use" (Hall and Loucks, 1975): "preparation" and "mechanical" use. Although the data establish the fact that there were changes to both cooperative learning and the teachers' appreciative systems, they are not intended to illustrate how these changes came about; the latter is beyond the scope of the study's thesis.

The data are presented in two ways. The first provides separate descriptions of Marcel and Alice, each organized in the same manner. Their initial reasons for using cooperative learning are identified in order to understand some of the beliefs and values which constituted their appreciative systems (Interview One; conclusion of preparation Level of Use).

This is followed by a description of some modifications they made to the strategy in response to two ambiguities experienced during implementation: "How will students develop the social skills they need to work with each other in groups?", and "What new relationships need to be

created between teacher and student?" (Interviews Two and Three; mechanical use). Finally, some modifications made to their appreciative systems are described (Interviews Two and Three; mechanical use).

The second level of presentation, titled Discussion, compares the teachers in order to identify similarities and differences in their experiences, and poses two questions: "What were some of the causes of ambiguity?", and "Why was there little reflection?"

What follows is not a comprehensive description of all the changes that may have occurred for these teachers as they implemented the innovation. Rather, the interview data are used only to illustrate the thesis that the management of ambiguity, through changing one's appreciative system and the innovation, is a feature of classroom implementation.

Each selected quotation is followed by two identification numbers, such as [1:8]. The first number identifies the quotation as coming from the first, second, or third interview, while the second number refers to the page in the transcript. For example, the identification [1:8] means that the quote is from the eighth page of the first interview transcript.

ALICE

The purposes of this section are to describe Alice's appreciative system in terms of why she was attracted to cooperative learning (Interview One), and how she resolved ambiguities encountered during the mechanical stage of implementation by altering cooperative learning and her appreciative system (Interviews Two and Three). While the description of Alice's appreciative system is largely based on the first interview, the reader will

notice some quotations from the second interview. This reflects the study's methodology. During the second interview, Alice was asked to react to, and reflect on, aspects of her appreciative system identified in the transcript of the previous interview.

As stated in the first chapter, the word ambiguity was chosen over problem because it refers to the way in which situations are perceived and understood, and has to do with interpreting and assigning value. During her implementation of cooperative learning, Alice faced numerous instances where she faced ambiguities, such as interpreting student reactions, and as a result modified the innovation and her own expectations of cooperative learning.

Why use cooperative learning?

At the time of the first interview in October, Alice had attended a brief introductory workshop, done some reading on the approach, and was using cooperative learning in an informal manner. During our first interview, she said that she hoped that, through her use of cooperative learning, students would learn to

> get along with people. They have to make things work. They have to get to the goal whether or not they get along with that person. . . the stronger kids might help the weaker ones, and ensure that the weaker students do know the material. It can also reinforce the skills of strong students by their having to explain it over again . . (also) students will take more responsibility for their own learning. [1:3]

Initially then, she had three reasons for having students work in cooperative groups: students would learn to get along with others, strong students would help the weak, and students would take more responsibility for their own learning. Let us examine what each of these meant for her.

Students learn to get along

An important feature of Alice's appreciative system was her concern with the social and emotional development of students. This was expressed by her wish to help them learn to "get along with others." She observed,

> I see a lot of kids who work hard to get perfect marks and they get them, but they don't really have many people to interact with. . . . I don't know if marks are the most important thing, but their social skills lag behind and I think cooperative learning can be of benefit to them. [1:4]

In order to "get along with others," then, students need to develop social skills. Furthermore, they need to develop these skills not only to be successful in school but so that they can function effectively in society.

> I like to see people getting along. I don't like every man for himself; you need each other. It's not just cooperative learning but it's getting along in society. [1:6]

The social skills she sought to develop were active listening, assisting others in academic tasks and encouraging one another:

> . . . they have to be able to listen to others and take in what that other person says and maybe use it, maybe adapt that idea to their own. They have to give feedback and the others have to listen. Not every man for himself. [1:4]

> I would expect them to be more concerned with their neighbor and not necessarily their best friend, concerned for the other's learning as well as their own. [1:5]

> I would expect to see more encouragement and more of it naturally done. [2:1]

These comments clarify what she meant by "getting along" and illustrate how she would help students develop socially and emotionally. They also reveal three other important elements of her appreciative system: students benefit from an exchange of ideas, they should actively help one another with classroom tasks, and they should encourage one another. Because she believed structuring student interaction cooperatively would help students learn to get along with one another, Alice was prepared to attend the five days of training so that she could develop a better understanding of this approach and use it more effectively.

Interpreting cooperative learning as "strong students helping the weak" tells us about both Alice's understanding of the approach and the values she holds. As Lortie (1975) pointed out, one of the ambiguities teachers face arises because of the difficulty they have meeting the needs of individuals while at the same time attending to the needs of the group. By having academically strong students help those with difficulties, Alice sought to manage this ambiguity.

This interpretation was the result of another key element of her appreciative system, being able to "reach individuals." She was attracted to cooperative learning because of its potential to help her do just this. However, her desire to be able to work with individuals created considerable ambiguity for her in relation to her role in the classroom. The role of "teacher," as she understood it, required her to be concerned primarily with the group rather than the individual. As an alternative, she proposed the role of "facilitator."

From her point of view, teachers communicate content to groups; facilitators start with what students know and build on it; "You have to teach things but take it from them and let them build on what they know." [1:10] She saw these as somewhat different roles that were at times in tension. Her preference, however, was clear:

> When you go back to the old style it was teacher up there, kids out here. Boom, here's the lesson, go to it. I'm sure there's some of that now but I'd like to use cooperative learning to become

more of a facilitator, really helping students along more on an individual basis. They may be in groups but you can still take into account their individual needs. [1:8]

When asked during Interview Two to elaborate on what it meant for her to be "a facilitator of student learning," Alice described this role as "reaching individuals" [2:8/9], and

helping individuals, encouraging individuals. I think that's what a facilitator would do. Ideally that's what a teacher should do or should be able to do. I think they should be synonyms. [2:8]

In summary, Alice found that traditional classroom organization did not always permit her to work with individual students. In response, she used cooperative learning to restructure classroom interaction in the belief that, when strong academic students helped those with difficulties, she would have more time to provide assistance to individuals.

Students take more responsibility

It was important to her that, as a facilitator, her students "take control of their own learning." [1:3] In order to realize this value, Alice tried to structure groups so that students felt more responsible for each other. During Interview Two, when asked to provide further details about how she would know if students were in fact "taking responsibility," she replied that one indicator would be fewer "last minute" assignments because

there's three other kids that they have to worry about or they have to work with in order to get the assignment done. I think if the others, peer pressure or whatever it is, gets them to do their work, they'll take more time to do it, put more care into it and get it in on time. [2:16]

She hoped to use the power of group dynamics to engage students and have them take greater responsibility for their own learning, as evidenced by getting the assigned work done.

Getting students to complete academic tasks was a concern for Alice. She commented that, when she began teaching, she was surprised how much "talking" went on and was tolerated in a public school classroom. Her own experience as a student in a private Catholic school, which was likely highly individualistic and competitive, had not prepared her for this. She commented,

> When I first came to public school I was surprised. "This is the way they do it?" "There's this much talking?" My first reaction was to ask if this was good or bad; "Is it good or is it detrimental to their learning?" I can see how there's a definite advantage in students being able to communicate, as long as its on task and involved in their learning. [1:6/7]

The tension between social interaction and learning was further revealed during her speculation about what her own parents would think if they came into her classroom: "I'm sure if my parents came into a school like this, or any school today, they'd say that this is not the way they learned." [1:8]

63

Her surprise revealed important aspects of the appreciative system she began teaching with. Learning was done on one's own, while social interaction was an unrelated activity one did with others. As she was still attempting to reconcile these two activities, Alice experienced considerable ambiguity and this drew her to cooperative learning because she felt it would "channel the interaction the kids are allowed and encouraged to have in the classroom so that it's more focussed." [1:7] This concern illustrates the uncertainty teachers face as they try to accommodate the expressive needs of students.

Lortie (1975) identified one of the uncertainties endemic to teaching as the conflict between the expressive needs of the students and the organizational requirements of the classroom. Expressive needs are the needs students have to develop their sense of identity, extend social relationships and seek self-esteem. By grouping students in various ways, cooperative learning alters the relationships students have with one another, thereby influencing how they meet their expressive needs. One of the most important expressive needs for students in early adolescence is to develop friendships and establish social relationships with peers. And yet, there is often little place in the classroom for the feelings and concerns students have about relationships with peers. When teachers begin to use cooperative learning, however, they are acknowledging the importance of these expressive needs as they restructure patterns of student interaction.

For Alice, expressive needs could be in conflict or in harmony with classroom tasks. In order to bring expressive needs in harmony with

64

classroom tasks, she proposed to "channel" student learning by having students assume some of the roles prescribed by the approach.

> The one step I want to develop is to assign different roles. Students will learn that they have to listen carefully and take note of who's encouraging others. They will have to listen for who's over-riding the situation, whether somebody is taking over or how many times so and so speaks up. [1:4]

While her comment demonstrates concern for helping students, it also reveals a concern with maintaining control of student interaction. In fact, her desire to channel student interaction seemed to dominate this initial phase of her implementation of the strategy. Because she could not actually be present simultaneously in every group, she felt that her influence could be extended by having students take on defined roles. This desire is illustrated by her comment that, "I guess I would [like to] be all of them, a facilitator, a teacher, an encourager. I guess I would carry all the role cards." [1:9] This differs markedly from using roles to help students develop understanding through talk and demonstrates how her appreciative system shaped implementation.

In summary, Alice was drawn to cooperative learning for a variety of reasons which reflect the values and beliefs that constitute her appreciative system. These reasons can be grouped into two inter-related categories; expectations for students and expectations for teachers. Students should develop social skills, actively listen to, encourage and assist one another, and take more responsibility for their own learning. Teachers should assist

65

students in their social, emotional, as well as academic development, attempt to work with individual students, and channel student interaction so that it is directed towards completing academic tasks.

The next sections describe modifications made to the strategy and her appreciative system as she began to work formally with cooperative learning. Evidence of these changes comes from Interviews Two and Three.

Changes to cooperative learning

Alice's initial understanding of cooperative learning was partly revealed in her description of the approach during the first interview before she had attended the workshops. She described cooperative learning as

> the children working in groups to reach a group goal but they are individually responsible for what they do. The average or sum of their marks is also a group mark. It's not a group effort where one or two do all the work. [1:1]

When asked during Interview Two if she wanted to alter this description after having attended three days of training with the Johnsons, she said she felt this initial definition was still accurate, but emphasized the importance of holding each individual accountable for the mastery of concepts, particularly when it came to assigning letter grades to individual students on report cards.

Changes in her understanding and use of cooperative learning came as a result of the way she managed the ambiguity she experienced as she went

from theory to practice. Her experience of ambiguity can best be understood by examining two key questions she struggled with. The first concerns the kinds of relationships that should exist between students. The second concerns her role as a teacher, and more particularly the nature of the relationship between teacher and students. The way she interpreted these questions and the answers she generated shaped her implementation.

How will students develop the social skills they need to work with each other in groups?

During the first interview, Alice stated her primary reason for attending the four-day training was to learn how to better structure student groups and teach social skills through formal role assignment.

Assigning student roles, however, placed her in conflict with the desires of students. This was evident in student reaction to her first attempt to have them practice the role of encourager; "they felt that they didn't need to have the roles . . . they thought it was too babyish, too trivial." [2:1] Their reaction is not surprising for two reasons. First, students understand the prevailing norms of individualism and competition that characterize schooling. The message is quite clear: work on your own and expect to be compared with peers. Assisting classmates and learning how to work effectively in groups does not really "count." Second, school is an important place for students to develop and extend relationships with friends (Goodlad, 1984). Cooperative learning interferes with the achievement of this goal since it seeks to redefine classroom relationships by assigning specific roles for individuals to perform within a group.

Faced with this conflict over roles, she conducted an experiment. She began two units simultaneously, one in Social Studies and one in English. In Social Studies, each student was assigned a clearly defined role such as encourager or group manager. In English, she identified four basic roles for each group, but let students decide which roles individuals would take and in what sequence. She retained some control by monitoring groups to ensure that students rotated through each role.

When asked why she chose to use roles in this way instead of prescribing them, she commented that it would be easier on herself and students, and that, "I didn't want to come down so that they would bite back." [2:3] It seems that student response influenced her implementation on this point far more than the values she held in regard to cooperation. Valuing cooperation while needing to maintain a positive relationship with students created ambiguity. As a result of this experiment and further use of cooperative learning, she de-emphasized assignment of students to specific roles and eventually decided not to use them on the assumption that "If the group is working well, they are using the social skills." [2:5]

Gradually, notions such as "groups working well," students taking on roles "naturally" and acting "from the heart," (i.e., sincerity when encouraging others or helping others out of genuine concern) came to guide her implementation of cooperative learning. For her, the approach seemed "to instill a good atmosphere for students and teacher. It's more positive." [2:17] When working in groups students "might be laughing, but they're laughing about what they're doing or how so and so does it. They're kidding each other but they're still getting their work done." [2:6] She determined

success according to whether or not she and the students were happy and whether or not the students were achieving. [2:14] This contradicts the Johnsons' recommendation that to determine whether or not students are demonstrating cooperative behavior teachers should gather data to monitor individuals and groups. Alice did not do so consistently and thus her sense that students were getting along with each other and herself and were generally working well guided her implementation.

Consistent with this view, she used student reaction as a guide when asked how she felt about her implementation of cooperative learning over the entire year. She believed there was increased encouragement among students, especially between friends, and a more positive atmosphere overall. [3:10] She also felt students increasingly adopted roles more naturally. In particular, working in cooperative groups had benefitted students she called "loners."

> I know that for a few kids the group situations have really been beneficial socially. They were loners and didn't have many friends. They just kept helping each other, encouraging, joking around. It is more positive. I guess that's self-esteem. It was good to see. [3:4]

She did not comment on academic achievement, the reactions of parents or even her expertise with the new strategy.

Still, she was left to wonder if students really understood why they were working cooperatively. One of the ways she coped with this was to ask students directly why they thought it was important to work together. This

69

proved to be an interesting move. In one instance, she asked students why they were asked to teach one another. She commented that "they came up with the ideas that I reinforce them with every once in a while." [3:3] They told her it was because it helped them learn more effectively and reinforced their understanding. She gained affirmation for what she was doing by having students reflect back what she had told them.

Alice's increasing concern with "loners" and the reaction of students during the final interview marks the start of a shift in concern away from how she was using the innovation to the effect the innovations was having on students. This shift in concern is congruent with Level IV, Routine Use and Refinement, as outlined by in the Levels of Use Framework. At this stage the user "knows cognitive and affective effects of the innovation on clients and ways for increasing impact on clients." (Hall and Loucks, 1975; p. 54)

In summary, Alice attended the training in order to learn how to better structure student groups and teach social skills. In order to teach them, she had students take on specific roles. Because of their negative reaction to this, she eventually stopped trying to teach social skills and instead relied on students' existing abilities to cooperate. Her use of cooperative learning was shaped on the one hand by her desire to channel student interaction and, on the other, by student resistance. Their reaction was not so much deliberate sabotage as an expression of the prevailing norms of schooling, and her attempts to make sense of their reaction were in part the result of dealing with contradictions inherent in schools.

The second key question that captures the ambiguity she experienced is:

What new relationships need to be created between teacher and student?

Alice's feelings of ambiguity about her role as teacher/facilitator also shaped the changes she made to cooperative learning. These feelings stemmed from two concerns she had: the assignment of specific roles and the autonomy of students.

As already described, to help students develop skills required for effective cooperation, she tried to compel them to take on specific roles. She did so by monitoring groups and individuals and allocating bonus points. Monitoring groups using observation checklists to gather data about cooperative behavior is an important aspect of the strategy. Alice felt, however, that when she monitored, "it's like the teacher against the kids." [3:11] Monitoring did not permit her to act as a facilitator where she could "make it easier for the group to work together or challenge a group that needs more challenge." [3:11]

Using bonus points to promote cooperation also created tension. Typically, bonus points are supplementary marks students earn when their group achieves a pre-determined standard. For example, everyone in the group might get five bonus points when every member achieves over seventy percent on a test. Alice used this incentive in an interesting way. She told students that she would give them bonus marks but she frequently did not record them. (Deception as an implementation strategy is not mentioned in the literature!)

Her second concern came from ambiguity about her desire to respect the autonomy and values of the individual while at the same time creating

and maintaining groups. She recognized this tension at the very outset during the first interview:

> I guess there are some people that can live by themselves. They strive for whatever they think is important and they make it. I guess I have to respect that too in the classroom. [1:6]

During the mechanical stage of use of cooperative learning this tension between the individual and the group manifested itself in two particular situations; the response of students to being placed in groups composed of individuals who were not their friends, and the reaction of two particular students to working cooperatively.

Students resisted teacher-assigned groupings, preferring to work with their friends. In our final interview she said that this had been one of her major difficulties.

> They complained that they were always with so and so. I said that it was by chance that the names are picked, that I didn't prearrange them. Well, I did in one case. So there's that problem and I'm sure I'll encounter it some more. [3:3]

Two particular students were unable or unwilling to work cooperatively at all. One girl valued high academic achievement and feared her standing might decline. Her mother became involved, and Alice had to spend considerable time explaining the strategy to both the mother and daughter. Alice had this to say about the situation:

She is competitive; she's an only child; she's individualistic, and I can see why cooperative learning is hard. I think, though, she realizes now that we do have to work in groups, that in life you'll be placed in group situations. [2:7]

I see her so unhappy in that group. She's a bright girl but she won't contribute what she's capable of contributing with these people. [2:17]

The girl's resistance to working with others continued throughout the year. [3:3]

In the case of the boy, the problem was quite different. He dominated groups and was unwilling to accept the ideas of others. She observed, "If he disagrees with others, his reaction is to say that their ideas are stupid. I'm not sure what I'm going to do to change that tone." [2:6] By the end of the year, she observed:

He is used to having things his way and has a hard time sharing his ideas and accepting them from others. His ideas are always best. That's his personality. You can't really change his personality but you still want to try and mould or bend it. [3:4]

In each of these instances, she found that it was impossible to eliminate the inability or unwillingness of students to work with particular individuals or with others in general. As a result, she considered whether she should let some students choose not to work in groups. In the end, the tension between individual desires and inclinations and the norms of cooperative learning remained and continued to create ambiguity.

A final change Alice made that stemmed from her wish to respect the values of students was her plan to pay increased attention to student reaction to cooperative learning the following year. At the outset, she had begun using this approach because she believed in its worth, but had not taken into account whether or not students considered it worthwhile. In the future, she planned to help them see the value of working collaboratively, not because the teacher tells them it is good for them, but because they themselves understand its value.

In summary, Alice made a number of significant changes to cooperative learning. She relinquished the assignment of formal roles and the monitoring of groups for their use of social skills, modified the use of bonus points and considered giving some students the option of choosing not to work in cooperative groups. These changes came about as ways of coping with the ambiguity she experienced concerning the kinds of relationships that should exist between students and her role as teacher. In order to manage the ambiguity she experienced, she relied on student response, her wish to respect their autonomy and the role of teacher as facilitator that she imagined for herself.

Changes in appreciative system

When Alice began using cooperative learning, she had a variety of expectations which reflected some of the values and beliefs that constituted her appreciative system (Interview One). Those expectations fell into two categories: expectations for her students and expectations for her own role.

During the course of implementation what changes, if any, occurred in these expectations?

At the time of the first interview before the workshops, Alice expected students would develop social skills, actively listen to and assist one another, and take more responsibility for their own learning. However, even at the end of the Second and Third Interviews, she was unsure whether all students had made progress in these areas. While her general expectations for students did not change, they received less emphasis as she came to accept and value the social relationships that naturally evolved between students during the course of the year.

The expectations Alice had for her own role played a very important part in her implementation of cooperative learning. This is not surprising since, at the beginning of implementation during mechanical use, teachers tend to be more concerned with their own needs rather than with those of students. Also, since this was her third year teaching, a concern with role is perhaps to be expected. She was struggling to determine what being a teacher meant, and in doing so contrasted teaching with facilitating student learning. At the time of the first interview she felt these terms "could be synonymous, but they're not synonymous right now. There's a lot of teachers that don't facilitate student learning, they just teach." [1:10] For her teaching seemed to mean simply conveying information. Facilitating student learning, on the other hand, involved "really helping students along on an individual basis and taking into account their individual needs," using students' prior knowledge and experience; it also involved "depending on the group and making it easier for the group to work together, or challenging a group when

it needs more challenge." She felt that by using cooperative learning she could become a facilitator of student learning. [1:8, 3:5, 3:11]

While there is little evidence of major changes in Alice's appreciative system as a result of her implementation of cooperative learning, this is not to say it remained entirely unchanged. Certainly she gained a deeper understanding of the goals she had for herself and her students. In particular, she came to understand more clearly how she might work as a "facilitator." She began with this abstraction, teacher as facilitator, and constructed a meaning for it through her actions over the course of the year. Her experience provides an illustration of how an appreciative system evolves over time through what Schön calls "knowing in action." As well, she developed an increased understanding of, and appreciation for, the social dimension of learning.

The purpose of this section was to describe why Alice was attracted to cooperative learning and the modifications she made to it and her appreciative system. As she implemented cooperative learning she changed it by relinquishing the assignment of formal roles and the monitoring of groups, altering the use of bonus points, and considered giving some students the option of choosing not to work in cooperative groups. In regard to her appreciative system, she did not so much modify it as deepen her understanding of the role of the teacher as facilitator. As she implemented the approach, she moved from a predominant concern with technique (Interview Two at the beginning stage of mechanical use) to an increased concern with students' reactions to working cooperatively (Interview Three).

Her initial concerns were primarily with how to group students, evaluate their work and organize activities. Experience taught her, however, that she also had to be concerned with student response to what she was doing.

MARCEL

The purpose of this section is to describe Marcel's appreciative system by examining why he was attracted to cooperative learning (Interview One), and how he resolved ambiguities encountered during the mechanical stage of implementation by altering cooperative learning and his appreciative system (Interviews Two and Three).

Why use cooperative learning?

Marcel was attracted to cooperative learning for two reasons. The first was professional and came in part from his lack of experience. The second was personal and stemmed from his moral beliefs.

Schön's description of appreciative systems and how they operate portrays them as a fairly coherent set of beliefs which professionals use to frame problematic situations (1983). Marcel's case was somewhat different. As a teacher with only three years experience, his appreciative system was still developing. In fact, some of cooperative learning's appeal was its perceived utility as a framework for guiding teaching. Marcel initially observed that cooperative learning

is the closest yet to a comprehensive system as opposed to a whole bunch of different ideas . . . is a framework for teaching . . . matched a lot of things I was doing. Mind you, I didn't have it formulated that way, there were lots of things I was doing that were wrong. [1:6]

If Marcel did not have a well-articulated appreciative system as described by Schön, how could reflection proceed? His last comment concerning "doing things wrong" provides an answer. He started with what I term a negative appreciative system. Since he did not have adequately developed criteria for determining desirable outcomes when implementing cooperative learning, he in part used what was undesirable as a contrasting standard for guiding his practice.

The central feature of his negative appreciative system was a general image of the "traditional teacher" who operates "the disciplinarian, autocratic classroom (which) no longer functions in today's society." [1:2] He had an idea of what this "traditional teacher" is like, and used this negative image as a means of defining, by contrast, the type of teacher he aspired to be. The negative image included the following teacher characteristics: expects to have control, uses punishment, expects to be obeyed for the sake of being obeyed, expects to be respected by virtue of his position, deals with students in a loveless fashion, treats students as a herd, must win in every confrontation with children, cannot admit he is wrong, and would like to be seen as a demigod. [1:3]

During the course of the interviews, it became clear that he was striving to develop an alternative image of the teacher. It seems that to do this he

initially had to define teaching by what it should not be. This process resembles that used by artists when they draw not the object itself but the "negative space" which surrounds it.

One can only speculate where this negative image came from. Lortie's [1975] observation that individuals are socialized into a deeply-held view of what teaching is during the course of the 13,000 hours they spend in schools as students may help us to understand why such an image remained with Marcel, even after his own professional training and three years of teaching.

Marcel used the alternative image of what teaching might be which he found in cooperative learning to reflect on his work.

> There were so many similarities between what I thought was good teaching and cooperative learning that I decided to adopt it because it was already formulated, it already had a process. So I could integrate a lot of the stuff quite quickly because it really said yes with a lot of my personal feelings and philosophies about education. [1:5]

By comparing his present practice with that described in the innovation, he attempted to deal with what he perceived to be the undesirable aspects of his own teaching. He commented:

> I can see sometimes when I do cooperative learning, when I do different types of learning that aren't traditional, I have to give up the power and become less the centre of attention. I feel sometimes inside me that, "You're giving up your power. Wouldn't you rather keep it?" I know that tendency is in teachers. They like to have control and I have to fight that and

say, "No, this is for the kids." They have to have the responsibility; they have to be given more control to be more responsible and more accountable for their education. [1:3]

When referring to "teachers," Marcel was really talking about the role of "teacher" he had internalized and for which he was seeking an alternative. One of the main reasons for implementing cooperative learning was not simply to become effective at using the approach. By using the innovation he hoped to become a "good" teacher.

For Marcel, a good teacher acted as a facilitator of student learning and was an eclectic user of instructional strategies. [1:4] The teacher should act as a facilitator so that students can assume increasing responsibility for their own learning. [1:1] Exactly how a facilitator would work with students remained unclear and was defined by its antithesis; the teacher would not "dominate students" and not be "in the spotlight."

To be "eclectic" meant he would be able to choose from a range of teaching strategies. This is perhaps Marcel's strongest image of what a teacher could be and featured prominently in the development of a more positive appreciative system. One consequence of this was that, as he was struggling with the implementation of cooperative learning, he was also working with other instructional strategies such as constructivism in the teaching of science, and guided imagery and prediction in language arts. For him, cooperative learning was another strategy available as part of his eclectic practice.

As we have seen, one of the reasons Marcel was attracted to cooperative learning was because he did not have a very well developed

appreciative system. This was particularly evident in his struggle with questions about the role of the teacher and what his relationship should be with students. Cooperative learning provided him with a way of answering some of these questions. However, his desire to become a more effective teacher was not the only aspect of his appreciative system that attracted him to the innovation.

The second reason Marcel began using cooperative learning had to do with some general moral beliefs he held. For example:

> I think the number one thing lacking in children and society is moral values and, I'd even go so far as to say, Christian principles. [1:10]

> For me the most important thing, no doubt in my mind, is the spiritual values, knowing how to care about others and be a good person. [1:11]

> I'm very different because I have got a different spiritual set of rules and they influence the way I look at life. I'm different from the rank and file teacher. I mean there are certain tendencies that are similar but the basis for my thinking is very different. [1:17]

Speaking as an active member of a religious organization (Jehovah's Witness), he believed that people should demonstrate more "care" for one another, and seek to enhance each others' welfare. Cooperative learning was seen to be compatible with these general moral ends, and therefore worth pursuing in the classroom. Further, these beliefs, as well as attracting him to

the innovation, also provided him with the resolve to persevere in its implementation.

In summary, Marcel was drawn to cooperative learning for numerous reasons which reflect the values and beliefs that constitute his appreciative system. First, he was struggling to develop a more positive view of the role of the teacher and for him this approach provided an alternative. Second, he believed students should take more responsibility for their own learning and teachers should act as "facilitators." Finally, his personal moral beliefs, were important to his understanding and use of the innovation.

Changes to cooperative learning

During the first interview in October before Marcel had attended the workshops, he described cooperative learning as

> a strategy or an approach to teaching and learning. It involves putting children in cooperative situations, socially interactive situations whereby every individual in the group is accountable for himself, and at the same time that person is accountable to the group. In other words, there's a group goal, a sink or swim attitude. Students have to cooperate together to reach the group goal. At the same time there's an individual goal so that each person is individually accountable. You must have those two elements. [1:4]

At the time of the second interview in late November, he felt that his initial description still stood but was now incomplete. He felt that he should add a concern with thinking skills:

> You've got to focus more on the metacognitive and ask students to evaluate the quality of their own thinking and make plans to improve it . . . I would add the thinking strategies and the three levels of processing (affective, cognitive and metacognitive). [2:7]

As with Alice, these descriptions only provide part of the picture of his understanding and use of the approach. He made these changes to manage the ambiguity he experienced as he moved from theory to practice. He also struggled with the same two questions concerning the kinds of relationships that should exist between students and his role as a teacher. The way he interpreted these questions, and the answers he developed, shaped his implementation of cooperative learning.

How will students develop the social skills they need to work with each other in groups?

When Marcel began using cooperative learning, he inevitably had to confront this issue of how to channel students' expressive needs in the service of academic goals. Lortie (1975) describes expressive needs as the needs students have to develop their sense of identity, extend social relationships and seek self-esteem. As we saw earlier, one of the reasons Marcel was attracted to cooperative learning was its potential to help him become a "good

teacher." Part of being a good teacher involved teaching the "whole child" which meant assisting students to develop a sense of identity, seek self-esteem and extend social relationships. Organizing his classroom to meet expressive needs proved to be no easy matter, however, partly because cooperative learning required him to intervene in existing interpersonal relationships by assigning students to heterogeneous ability groups.

Heterogeneous grouping is a critical feature of cooperative learning; within a group, each member assumes a particular role, most often designated by the teacher. Assignment to groups was a problem because the students, while they wanted to select their own groups, were not very effective at it. [2:6] Groups did not function well when students had the opportunity to choose members and the roles they were to assume. Marcel was then faced with a dilemma. He wanted to let students choose their own groups, believing that this enabled them to meet their expressive needs. At the same time, he felt that they did not have the skills necessary to make a group function effectively.

The Johnsons recognize that students are often unskilled at working in groups. In fact, the two strategies suggested to help students improve in this area distinguish cooperative learning from other forms of group work. The first strategy involves teaching social skills through modelling and role-playing. The second requires teachers to use "group processing," a strategy that has students assess how well they worked individually within their group and how well their group functioned as a unit. Based on this assessment, students then set specific goals for improvement.

Initially, Marcel taught social skills so that groups could function more effectively. By the second interview, however, he had spent far less time and, by the end of the year, none at all. This decline occurred for two reasons. The first was that he grew to believe that students could develop social skills on their own if they were simply given the opportunity to work in groups. The second was that, as he increasingly used a constructivist approach to teaching, he found he did not have enough time for social skills instruction. Faced with this dilemma, he relinquished teaching social skills.

When Marcel began to use group processing he experienced considerable ambiguity. The Johnsons recommend that the positive be emphasized when asking students to reflect on how their group functioned. In practice Marcel found that students wanted to discuss their negative experiences, and he was unsure if they should do this. As well, he found that this strategy took a great deal of time. By the second interview he modified group processing by doing it more informally so that it took less class time and by placing a fifty-fifty emphasis on the positive and what could be improved. What prompted him to modify his original understanding and use of the strategy? He decided to make these modifications because he felt that the students had come to know what skills were required to work in groups and so he spent more time looking at where the problems were and what might be improved. [2:14]

The modifications Marcel made to group processing illustrate a general move away from strict adherence to the Johnsons' format as he gained experience with cooperative learning. In the beginning, so that he could get

cooperative learning "right," Marcel tried to follow closely the model proposed by the Johnsons. The reason related to his own uncertainty:

> It's like I'm holding a little rope. You know, out on the prairies when they have big storms, sometimes the farmer had to go to the barn and they tied a rope from the house to the barn. Well, that's what I do kind of for myself. I stick to the guidelines to help me get to the barn, to get done what I have to get done. Once I've done that several times I feel that I can leave the rope and I can make some changes, and yet still I can get back to that rope if I need to without getting lost. [2:3]

How does this increasing autonomy come about? During implementation, Marcel initially followed the model closely because, as he said, he didn't know "which way was up." Sticking close to the model provided reassurance that he was doing the right thing and kept ambiguity at a manageable level. Later, however, Marcel remarked,

> I wasn't comfortable with the things that happened and I didn't always want to do it their (the Johnsons') way, but I did it anyway hoping that maybe with time things would straighten out. Now I'm feeling that you've got to be more flexible. [2:3]

> . . . it's harder to define cooperative learning now because I'm using a lot more cooperative learning but in an unstructured environment. Now I tend to be a lot more informal and I tend to mix my strategies. It's sort of semi-cooperative learning. Instead of going off the deep end with Johnson and Johnson, I've assimilated some of their ideas and I've become eclectic (eclectic being his original description of himself). [2:14/15]

These comments reveal he moved from strict observance of prescribed procedures because, as he developed confidence using the strategy, he felt he could alter it. By the third interview Marcel felt cooperative learning was part of his "bag of tricks" [3:5] and "was part of me, one of the strategies I'll use." [3:6]

As well, he started to develop a greater sense of his own values and beliefs. Another reason for his increased confidence came from student response: "If it doesn't work with the kids, if the kids aren't into it and I'm not comfortable doing it, it doesn't matter who says it's good." [3:2] Reliance on student response also enabled him to overcome fear of censure by parents. [3:8]

To summarize, Marcel attended the training in part because he believed it would help students take more responsibility for their own learning and because he thought it would help him redefine the role of teacher as "facilitator." One way he felt he could achieve these goals was to teach social skills. However, when he used cooperative learning as recommended he discovered it wasn't working as expected and he had to adapt what he thought was the prescribed approach. As a result, he de-emphasized formal teaching of social skills and stopped having students reflect on how their group functionned. One of the reasons he was able to make modifications stemmed from his increasing confidence with the value of the strategy. This confidence stemmed mainly from positive student reaction. It seems that in changing the innovation, student reaction had a very important role to play.

The second key question that captures the ambiguity he experienced is:

What new relationships need to be created between teacher and student?

To implement cooperative learning, teachers may have to reconceptualize their own roles as well as those of students. As a result, roles often become ambiguous.

Central to any discussion of the teacher's role is the issue of power. Traditionally, teachers are "in charge" of the classroom. They determine what is of value through their choice of topics and the means of assessment and evaluation they use. They set the pace and modes of learning. Most important for our purposes, being in charge means that teachers determine the patterns of social interaction available to students.

Traditionally, teachers structure classroom interaction using individualistic or competitive patterns. When teachers use cooperative learning, however, they begin to structure learning experiences designed to help students develop understanding and master concepts as a result of working together. The teacher no longer acts as the sole or major disseminator of knowledge; students, working together, develop their own understanding. This new role corresponds to what Marcel described as becoming a facilitator.

What happens when teachers begin to alter patterns of social interaction? For one thing, they must learn to negotiate new norms of cooperation with students. This may be difficult because the existing norms of competition and individualism have a long tradition reinforced through classroom seating arrangements that physically isolate students, sanctions for

unauthorized talking and sharing of work, and the incentive provided by marks. This tradition is not always effective, however, as is evident when students either ignore competitive norms and don't participate, or reject them completely and drop out of school.

In cooperative learning, teachers structure activities to include positive interdependence and individual accountability with a view to having students come to value cooperation as a way of working together and to care about one another. Because norms of cooperation and caring cannot be imposed, teachers and students must negotiate the social organization of the classroom. During implementation, this situation is complicated by the fact that negotiation is often new to both teachers and students.

How is this negotiation of classroom norms experienced by Marcel? At the time of the first interview in October, he stated that he was drawn to cooperative learning because he felt it would help him become a better teacher. He believed that the teacher should not dominate students but act as facilitator, letting them assume greater responsibility for their own learning. [1:1] This was important because he felt that "one of the most important things about teaching is not the content; it's the process and getting them to think." [1:4] However, as is evident in Interview Two, when he actually began to use cooperative learning and had to re-evaluate his power to determine the direction and pace of learning, Marcel experienced ambiguity. This struggle with the question of power is an example of what he described earlier as needing to deal with negative tendencies in his teaching. He observed:

> When you give up power . . . you lose control a little bit. You're
> in an insecure position because you're not exactly sure how the

class is going to turn out. You're not exactly sure things are going to go the way you'd like them to. When you use non-traditional approaches, they (the students) don't always give you exactly what you want; they become enlightened; they diverge a little bit, so it's hard to direct them in the outcome. [1:4]

The ambiguity he experienced over controlling the direction and pace of learning was managed once again by relying on student response. If they were with him, he knew he was on the right track. Yet, as the year came to a close, this dilemma re-emerged due to the pressure he felt to cover "enough" content. In response, he further modified the innovation by using less formally organized cooperative learning lessons [3:6], "emphasizing cooperative learning less and . . . relying more on the intuitive abilities of the kids to work in groups and to share information, and not to cheat by using the smartest kid in the group." [3:7]

Another change he made in his relationship with students was expressed in a comment during the final interview; "as you start to teach you realize that the more these kids know why you're doing what you're doing, the more ownership they have over it." [3:12] Using cooperative learning allowed him to help students understand not only what they were learning but why they were engaged in particular activities and learning specific things.

In summary, Marcel made a number of significant changes to cooperative learning. He used less formally structured groups and gave students increased choice in selecting their own groups, stopped teaching

social skills, altered group processing, and gave group work less time because of the need he felt to cover more material. These changes came about as ways of coping with the ambiguity he experienced concerning the kinds of relationships that should exist between students and teacher. In order to manage the ambiguity he experienced, he relied increasingly on his own values and student response rather than a strict adherence to the model.

Changes in appreciative system

As Marcel implemented cooperative learning, the changes he made to his appreciative system came as he developed a deeper understanding of the goals he had for himself and his students. Some of those changes related to his understanding of the issues of control, the role of the teacher and what his relationship should be with students, were described in the first part of this section during the discussion of the reasons he was attracted to cooperative learning. This final part examines what changes, if any, were made to the moral aspects of his appreciative system.

As he worked with the innovation Marcel experienced both excitement and anxiety; excitement because he thought cooperative learning could permit him to achieve personal educational aims, and anxiety because he wondered if parents would ask why he was not proceeding as he normally did.

Because of his belief that using the innovation might enable him to make a difference "in the world," Marcel sought to promote cooperation and

help students develop social skills. At the time of the first interview he had a vision of society where cooperation has a significant role to play:

> You've got to address what's right and wrong in society, you just can't say that everything goes. That's what I think cooperative learning should be used for. [1:18]

At the outset Marcel wanted to teach collaborative skills to promote caring and concern for others. At the time of the second interview, however, when he had started to actually use the approach, he felt that if adequate time were used to develop the understanding, responsibility and self-esteem required for cooperation, there may be less time available to teach curricular content. As a result, he faced uncertainty about being able to cover as much material as he normally would have.

The ambiguity presented by time-use reveals the tension he felt between his personal aims (developing student social skills) and those he perceived the parents to have (that course content be covered). Marcel recognized this:

> . . . when you begin to change, parents start to ask questions. There are a lot of people who don't like group learning. I've had three or four parents call and ask about cooperative learning and didn't like it, so that's problematic for a teacher. [3:3]

Marcel felt highly accountable to parents and they figure prominently in his thinking. For him parents are,

. . your bread and butter. I mean let's face it, if they don't like you they can get rid of you. More importantly, I think that if you want the kid's education to be effective you've got to have the parents working with you because you'll run into problems somewhere along the line where you'll need the parents' support. [3:3]

This ambiguity was intensified because, when students are assisted in reflecting on their learning, there may be little tangible evidence to show parents that something is being learned. As a consequence, he was concerned that parents would criticize him for taking time away from content, something he perceived to be a parental value, in order to teach social skills which he valued.

How did Marcel resolve the ambiguity he felt about the use of time? He proposed two solutions. The first was unrealistic: to have the district mandate cooperative learning for earlier grade levels so that students would already have the desired social skills. Lacking such a long term solution, however, he sought a compromise between responding to what the curriculum demanded of him and the exigencies of his personal values. In our final interview, he observed:

as the end of the year rapidly approached I realized that I hadn't covered a lot of the things that I wanted to cover . . . I was emphasizing cooperative learning less and I was relying more on the intuitive abilities of the kids to work in groups and to share information. [3:7]

The second way he proposed to resolve the tension between his own values and those he perceived parents to have was to transmit his values "in such a subtle way that no one can hammer me for doing it. We're not allowed to do that (i.e., transmit values)." [1:7] Subtlety was not a wholly satisfactory solution since he felt he should still be able to justify to parents what he was doing, even though cooperative learning was "new and you can't justify everything you're doing." [2:2]

Had Marcel relinquished his commitment to his personal values? From his point of view, certainly not. He felt he had been successful in using cooperative learning, based on his observation that the students had improved in their general ability to get along and that there had been an improvement in the self-esteem of individuals. He commented:

> By the end of the year the kids were getting along. They were nothing like they have been in the last two years in terms of social problems: squabbling, bickering and getting their parents involved. This year at the end of the year everyone was getting along and there was encouragement; there was a sharing; there was a respect for oneself and for others at a level that I have never seen before. [3:8]

In the end, Marcel dealt with ambiguity by relying on very general beliefs about his efficacy. He remarked:

> I can't tell you right now if my kids are achieving better academically. I can't. But I do know that socially the kids are leaving my class better-equipped to deal with the changing

society we live in, to deal with human beings, to deal with the problems. [2:4]

Over the course of the year he reduced the emphasis he initially placed on promoting his own values through the formal use of cooperative learning. He did so because he did not want to be criticized by parents for promoting his values at the expense of covering content.

In summary, Marcel made modifications to both the innovation and his appreciative system. As he implemented cooperative learning he changed aspects of it. He made less use of formally structured cooperative groups, stopped teaching social skills and modified group processing. The modifications he made to his appreciative system came about as he reflected on the role of the teacher and clarified his own assumptions about that role. During implementation, he compared the negative image he had internalized with the alternative provided by the approach. As a result, he was able to develop a more positive view of his role as teacher. His moral beliefs were also an important part of his appreciative system; they permitted him to persevere in his use of the innovation, but did not seem to be changed or even clarified in the process.

Discussion

The preceding section described selected interview data separately for each teacher. In this section, the data are presented in a second way. The discussion examines similarities and differences in the experiences of the two

teachers, and poses two questions: "What were some of the causes of ambiguity?", and "Why was there little reflection?"

Similarities and Differences

To better understand how they implemented cooperative learning, it is instructive to examine the experiences of these two teachers for similarities and differences.

Marcel and Alice wrestled with similar questions about how they could help students develop social skills needed to work with each other, and about the kinds of relationships teachers should establish with students. As well, they still had fundamental questions about their roles, and the values and expectations they attached to teaching seemed rather vague. As a consequence, they had difficulty explaining in depth their implementation problems and justifying the criteria by which they judged the success of their solutions.

One of the reasons they were attracted to cooperative learning was that it suggested some answers to these questions, particularly for helping them work as "facilitators." Their struggle to clarify facilitative ways of working with students compelled them to consider persistent problems of practice related to teacher control and students taking more responsibility for their own learning. How they managed the ambiguity they experienced was influenced in part by their different appreciative systems. For Marcel, cooperative learning provided an alternative to the controlling teacher he was reacting against, and suggested a way to act that was consonant with his

personal beliefs. Alice wanted to use cooperative learning to harness student social interaction and achieve greater classroom harmony.

Another important similarity was that student response shaped the implementation of cooperative learning more than the advice of trainers or colleagues. This should not be surprising since they essentially implemented the approach on their own. In both cases they gradually de-emphasized the teaching of social skills and increasingly relied on students' general ability to work in groups.

While there are similarities between Marcel and Alice, there are some important differences as well. For instance, the issue of parental approval, so significant for Marcel, was a non-issue for Alice. In part, this was due to her greater clarity of purpose. Her focus was on improving instruction and, as a result, she could more easily determine her success. As well, she had a gentler attitude towards herself: she was going to try out cooperative learning and see what worked. "I'm going to have to use it more and in different ways. I'll just practice. Experimenting is probably the word for this." [2:14] Alice implemented cooperative learning as a series of experiments using student reaction to guide her.

Marcel took a different approach because he had much more at stake. Cooperative learning was to become a "framework for teaching" because it provided "a comprehensive system as opposed to a whole bunch of ideas." [1:6] His goal was not simply to become effective at using cooperative learning but to become a "good" teacher. Cooperative learning was viewed as an important way to define his role in the classroom.

They also had somewhat different criteria for judging the success of cooperative learning. Marcel spoke not of student academic improvement, but of his rather vague belief that they would leave his class "better equipped to deal with the changing society we live in, to deal with human beings, to deal with the problems." [2:4] Alice, for her part, did not rely on formal data collection about group work or student learning. Rather, she judged success according to general observations: "the kids aren't complaining," "they're enjoying their learning," "if groups are working then they're taking on roles," "the tone is good," "they're happy." [2:5/6]

What were some of the causes of ambiguity?

As Marcel and Alice implemented cooperative learning, they used their appreciative systems to manage the ambiguity they experienced. As previously stated, an appreciative system is the combination of personal and professional theories, knowledge and values that guides an individual's practice. It shapes the questions teachers ask, the decisions they make, and how the results of those decisions and the actions that follow from them are interpreted.

At the outset, Alice and Marcel chose to use cooperative learning based on their personal values and beliefs. They both valued cooperation and, as a result, sought to re-define their role in the classroom. While this general belief may have been adequate for making the initial choice, it was inadequate for helping them cope with the ambiguity encountered as they tried to bring about change in their classrooms.

This is because they also needed to rely on professional theories, knowledge and values to guide them during implementation. However, in teaching, there is a lack of technical knowledge available. Lortie (1975) observes that "teaching has a greater degree of uncertainty in work assessment than many, if not most, other fields of work," and, as a result, "critical, recurrent problems remain unresolved in the daily work of teachers--uncertainty stalks as they try to determine whether they are influencing students" (p.150).

Many of the problems Alice and Marcel encountered as they implemented cooperative learning were specific instances of these critical recurrent problems. However, since they could not rely on the technical knowledge of their profession, they had to rely almost exclusively on their own personal theories, knowledge and values. Consequently, in order to understand the causes of ambiguity it is useful to examine the way Alice and Marcel came to terms with the five "endemic uncertainties" described in Chapter Two: attainment of instructional goals, absence of concrete models for emulation, unclear lines of influence, multiple and controversial criteria for evaluation, and changes in the teacher's role.

Attainment of instructional goals

The goals sought by teachers are not easily realized because they are usually abstract and difficult to define. As Lortie (1985) reminds us, our knowledge of interpersonal influence leaves much to be desired and what we do know suggests that it is difficult to alter the outlook and behavior of

others. This difficulty is compounded for teachers since they attempt to realize these goals with immature people whose participation is at least in part involuntary.

Both teachers had difficulty determining their effectiveness at fostering cooperation. Their goals remained ill-defined: students should get along with one another and cooperate, and parents should not have cause to be concerned with the teacher's actions. In the end, both teachers seemed satisfied believing that their classrooms were places where most everyone, including the teacher, was happy and felt included. There seemed to be little concern with determining specifically what effect cooperative learning had on academic achievement, or how it actually assisted all students in their social development.

Absence of concrete models for emulation

Lortie argues that teachers have no fixed and reliable models that can serve as guides for comparing intermediate outcomes with the abstract goals they seek. There are no precise blueprints, plans or detailed specifications for teachers. This proved to be important during the implementation of cooperative learning for two reasons.

First, there was no model of how to effectively manage the ambiguities the teachers experienced. The primary aim of the training was to provide participants with information on how to organize groups for cooperation. This alone, however, could not prepare Marcel and Alice for the ambiguity experienced during implementation as was particularly evident in Marcel's

struggle with the negative image he held of teachers. The task of implementation for him went far beyond organizing his classroom for cooperation. While Alice's case was not as extreme, for her, too, the real work of implementation involved dealing with issues of identity. Establishing an appropriate relationship with students was of far greater concern than organizing students for a jigsaw activity.

The second reason had to do with the absence of a model of how students, both individually and working in small groups, might actually demonstrate cooperation. Neither teacher had the opportunity to observe a classroom where students were engaged in the behaviors that the Johnsons identify as characterizing high levels of cooperation. This made it difficult for them to judge how effective they were in achieving their goal of fostering social development. Further, they themselves probably lacked experience of what it is like to work in a high functioning group. It seemed unlikely that either their university training, or their current school assignment, provided them with an opportunity to work as part of a team. As a result, they relied on their general sense of how people should get along as a guide for success.

Unclear lines of influence

It is difficult for a teacher to identify his or her contribution to the overall education of a student or to assess the quality of that contribution. He or she is normally only one of the significant adults that influences a child. Marcel felt that his values sometimes contradicted those of parents. Both teachers believed that their efforts to instill cooperation were not supported

101

by some parents and colleagues. As well, they felt that there was little support for their efforts by "society" at large. This feeling of limited influence was probably one of the reasons both teachers eventually stopped teaching social skills.

Multiple criteria for evaluation

Lortie reminds us that success is simultaneously evaluated along many dimensions. This is certainly true for these two teachers. To ascertain effectiveness they used multiple criteria. They wondered if they had covered an adequate amount of content while meeting the needs of individuals, and if students had developed a degree of understanding of the material, were better able to cooperate with others, and took greater responsibility for their own learning.

Not only were multiple criteria used but there is often ambiguity about assessment. Because they worked with growing adolescents, Marcel and Alice could not say after one year to what extent students had developed the social skills necessary to function cooperatively in "society." Whether or not students develop this capacity can be ascertained only many years in the future, if at all.

Changes in the teacher's role

The teacher's role is a complex one. He or she is expected to maintain "classroom control" and must be seen to be in charge of classroom affairs. In

large part, this emphasis on control stems from the "need to get work done by immature, changeful, and divergent persons who are confined in a small space." (Lortie, 1975, p.151) The teacher is left to "motivate" students not only to work hard but, if possible, to enjoy their efforts. As well, the leadership roles of getting group tasks accomplished and attending to expressive needs of individuals may come into conflict.

Alice and Marcel used the cooperative learning strategies of setting a group goal and establishing individual accountability to help ensure that students completed assigned tasks. In this way students became accountable, not only to the teacher, but to their peers. This added accountability may have reduced the effort needed to motivate students. Student motivation may also have increased because cooperative learning links task completion with students' needs for exchanging ideas with friends, getting academic and emotional support from peers, and making routine tasks more interesting through humour.

It seems that much of the ambiguity Alice and Marcel experienced was caused by the fact that many of the problems they encountered as they implemented cooperative learning were specific instances of critical recurrent problems in teaching. Without systematic and relevant knowledge to guide them, they relied on their own observations to determine whether their use of the innovation was effective. As a result, student response was critical during implementation.

103

Why was there little reflection?

Examining the transcripts revealed little of the reflection described by Schön. There are at least four reasons for this. First, these teachers' working conditions did not encourage reflection. Working alone with thirty students, they were unable to simply stop the class as they considered their next move. They had to move the lesson forward or risk the immediate consequence of student disruption, unlike town planners or architects who may pause and reflect on problems.

Second, they lacked the "tools" (e.g., concepts, questions, theories) beyond their daily experience for engaging in serious and critical reflection on implementation. This seems to confirm Lortie's (1975) assertion that teaching has a poorly developed technical culture. Both teachers had difficulty talking in depth about their own appreciative systems and their experiences with the innovation. Their comments were often general and lacked analysis.

Third, although Marcel and Alice worked in the same school, they did not collaborate or challenge one another. The norms of the school are strongly built around teacher isolation, autonomy and individualism (Lortie, 1975; Sarason, 1971; Goodlad, 1984).

Fourth, after the workshops, there were no implementation support activities made available from the school district. For example, Marcel and Alice could have benefitted from being part of an ongoing discussion group in which they could articulate their problems (i.e., appreciative system) and listen to those of other teachers.

Are we to conclude that these two teachers failed in their implementation of cooperative learning? The answer must be "no" for two reasons. First, keeping in mind the Levels of Use framework developed by Hall and Loucks (1977), it would be unrealistic to assume that, after one year, they would have successfully implemented such a complex innovation. This is supported by the findings of Johnson and Johnson (1989) that it takes at least two years to achieve some form of executive control. It is to be expected that these teachers still had questions about their role and that of their students.

Second, we must be careful about what is meant by successful implementation. If success is determined by the degree of fidelity to the original innovation, their implementation of cooperative learning must be considered flawed. However, because implementation also involves "the transformation of subjective realities" (Fullan, 1991), fidelity to the original idea cannot be the sole criterion for determining success. Significant changes took place in the teachers' understanding of themselves and their work. As they learned to manage ambiguities, both teachers developed a more refined appreciative system. Implementation contributed to their ongoing professional growth.

This chapter further clarified and illustrated the thesis that implementation involves the reflective management of ambiguity. It did so by analyzing data collected during interviews with two teachers as they moved through the preparation, orientation and mechanical stages of implementing cooperative learning. The data illustrate that teachers manage

the ambiguity they experience by using their appreciative systems to modify the innovation so that they can improvise short-term solutions to immediate implementation problems; these problems, however, are often inextricably linked to larger problems endemic to teaching which may defy any lasting solution. Also, when managing ambiguity, teachers' appreciative systems may be changed. Some of the implications of this two-fold change are discussed in the next chapter.

CHAPTER FOUR
SUMMARY, IMPLICATIONS AND
RECOMMENDATIONS

This chapter briefly summarizes the study's purpose and findings, raises implications for the implementation of classroom change, and makes some recommendations for further research.

Summary

The purpose of this study is to clarify and support the thesis that teachers manage the ambiguity they experience as they implement classroom change by modifying their appreciative systems (i.e., values and beliefs about teaching) and the innovation itself.

The argument for this thesis has two parts. The first part of the argument (Chapter Two) clarifies and supports the thesis in terms of selected literature that speaks to the implementation of classroom change. After providing a brief overview of four conceptions of professional knowledge and demonstrating their limitations for understanding implementation, the chapter discusses a conception of implementation that emphasizes the teacher's management of ambiguity. This conception is based on selected writings of Donald Schön (1983, 1987), Dan Lortie (1975) and Magdalene Lampert (1985, 1986). These three authors provide insight into how teachers

understand and deal with uncertainty encountered during implementation of classroom innovations.

Schön's conception of reflective professional practice provides an alternative to the prevalent technical view of teaching and implementation. He argues that professionals working within a technical conception assume that problems can be analyzed using a well-defined framework, and then solved by applying pre-determined problem-solving procedures so that goals based on a broad consensus can be achieved. Schön counters this view with the argument that the beliefs and values (or "appreciative system") professionals hold play a fundamental role in their identifying problems, generating solutions, and assessing outcomes, and that, as a result, their work is characterized by uncertainty.

Lortie's work is then used to outline some of the implications reflective professional practice has for teaching. His study supports Schön's argument that professional practice is characterized by uncertainty, and further identifies various "endemic uncertainties" particular to teaching. Most significant for the purposes of this study are those uncertainties related to the attainment of instructional objectives and the establishment of appropriate relationships with students.

Finally, Lampert's work is used to describe how teachers develop solutions to problems encountered during implementation. She argues that to develop solutions, teachers must be able to manage ambiguity. This requires them to use their values and beliefs, or appreciative systems, in developing short-term solutions to persistent problems of practice.

The work of these three authors provides a conception of implementation that emphasizes the teacher's reflective management of ambiguity. Teachers use their appreciative systems, those unique sets of professional and personal beliefs, to understand problems and develop solutions encountered during implementation. However, there are limitations to their ability to eliminate uncertainty since many perennial problems of practice can never be "solved." As a result, teachers accept the fact that, during implementation, solutions are often improvised and temporary. They recognize that the problems encountered inevitably have multiple, and often contradictory, solutions because of the various aims teachers bring to their work and the conflicting roles they often assume.

The second part of the argument (Chapter Three) further clarifies the thesis by illustrating how two teachers early in their careers implemented aspects of cooperative learning over the course of one year. They did so by using their appreciative system to modify the innovation so that they could improvise short-term solutions to immediate implementation problems. These problems, however, were often inextricably linked to larger problems endemic to teaching which resist any lasting solutions. In trying to manage the ambiguity they experienced as they confronted these larger problems, aspects of these teachers' appreciative systems were changed. This change helped them define more clearly their role in the classroom and what constituted appropriate relationships with students.

There is no doubt that the thesis argued in this study is significant. Fullan (1991) stresses that one of the main reasons for the lack of successful implementation is the failure to pay attention to how people actually

experience change. The study's significance lies in its focus on how teachers understand and deal with changes they are undertaking in their classrooms. It brings together three important topics found in the implementation literature: one, uncertainty and ambiguity play a significant role during change and implementation (Fullan, 1991; Glickman, 1987; Lampert, 1985; Lieberman, 1984; Lortie, 1975; Marris, 1975; Olson, 1980; Sarason, 1990; Schön, 1971; Simmons and Schuette, 1988) two, teachers' appreciative systems (i.e., expectations, beliefs and values) influence how they interpret and implement innovations (Fullan, 1991; Schön, 1983, 1987; Olson, 1980), and three, as they implement an innovation teachers modify it (Berman and McLaughlin, 1976; Fullan, 1991; Hall and Loucks, 1977).

This study begins with the premise that one way to understand how teachers experience change during the implementation of classroom innovations is to examine the way they cope with ambiguity. Teachers experience ambiguity because of the inadequacy of their current understanding of their practice (appreciative system) to help them interpret and solve the problems encountered during implementation. The thesis argued here is that they are able to manage ambiguity by modifying their appreciative system (that unique set of personal and professional theories, knowledge and values that guides an individual's practice) and the innovation itself.

The teachers' ability to cope with uncertainty and manage ambiguity is likely to determine their success in implementing classroom change. The way they manage ambiguity will depend on their appreciative systems as well as the culture of the school, the relationships they have with students,

colleagues, and administrators, the degree of personal and professional self-confidence and satisfaction, years of experience, and career aspirations.

While the ways teachers manage ambiguity may be idiosyncratic, the thesis argued is that teachers commonly use two strategies: they modify their appreciative systems and they make changes to the innovation itself. These two ways of managing ambiguity are not equally weighted however. It may be easier for a teacher to modify the innovation than his or her appreciative system. There are a number of reasons for this. First, classroom innovations are frequently based on values and beliefs which may be at variance with those of students, parents and administrators. Faced with a negative reaction to the change they are implementing, teachers often modify the innovation to make it conform to existing norms and may even abandon it entirely.

Second, the implementation plan is rarely designed to provide teachers the opportunity to compare their own values and beliefs with those implicit in the innovation. In fact, implementation is often viewed by teachers and planners as the faithful reproduction of an innovation. Even when the opportunity for reflection is available, it is difficult. Because reflection tends not to be valued by their profession, teachers have little experience reflecting on their work. Further, the weak technical culture of teaching (Lortie, 1975) is frequently unable to provide the concepts necessary for reflection. As a result, critical features of the innovation are often ignored or rejected because teachers may not appreciate their importance.

Third, the development of a teacher's appreciative system is a career-long process. It takes considerable time for changes in values and beliefs to be expressed in classroom practices. Changes to the innovation are more readily

111

observed than the more complex and subtle changes in a teacher's appreciative system.

Fourth, when teachers implement classroom change, they frequently encounter persistent problems of practice or "endemic uncertainties" (Lortie, 1975). While they are initially drawn to innovations because of their personal values and beliefs, these are often inadequate to help them manage the ambiguity experienced during implementation. As a result, ambiguity is often intense and the innovation is modified to fit the constraints within which they work.

It is important to remember that ambiguity is neither negative nor positive. It is a condition of teaching (Lampert, 1985, Lortie, 1975, Schön, 1983) and plays an important role in professional growth. Surprise (Schön, 1983), or problematic situations (Dewey, 1938), provide an opportunity for teachers to deepen their understanding of their practice. In particular, during implementation, they refine both their understanding of the innovation and their appreciative systems. The aim is not to eliminate ambiguity but to manage it by developing a capacity for improvising short-term or immediate workable solutions to longer term uncertainties (Lampert, 1985).

When we recognize that the immediate problems faced during implementation are often linked to persistent problems of practice, and that implementation involves the transformation of the innovation and the teachers' appreciative system, we can better understand why classroom change may be so difficult. This understanding raises questions about the kind of support given to teachers as they undertake classroom change. Some of the implications of these findings are now discussed.

Implications for Implementation Support

The purpose of this section is to identify some implications that this conception of implementation (that emphasizes the reflective management of ambiguity) has for two implementation support activities commonly used within school districts: formally structured training sessions and school-based teacher collaboration.

Formally Structured Training Sessions

If the implementation of classroom change requires teachers to manage considerable ambiguity in their work, then there are four obvious implications for the design of training sessions. A first implication relates to the content of training sessions. Typically teachers are introduced to an innovation (its purposes and scope) and given some guidance for its implementation. This knowledge is not always sufficient to help teachers better manage the ambiguities they may face as they start to use the innovation in their classrooms. Therefore, at some point during the training sessions, teachers may usefully focus on the meaning of implementation itself: how it gives rise to various kinds of ambiguities that can be managed in part through an ongoing modification of the innovation and of one's own appreciative system.

A specific way to acknowledge uncertainty is to identify dilemmas that may be particular to the implementation of the innovation, such as the issue

of classroom control in cooperative learning. When teachers implement cooperative learning, they sometimes ignore the features of positive interdependence, individual accountability, and group processing, and assume that students will complete assigned tasks simply because they are working with peers. The result is often predictable; both students and teacher become frustrated and cooperative learning may even be abandoned. By discussing issues like this beforehand, teachers may be better prepared to cope with uncertainties. The development of this understanding may help them better tolerate ambiguity and become more adept at improvising short-term solutions to implementation problems.

Another way to help teachers better manage the ambiguities they may face is to place less value on faithfully reproducing the innovation in the classroom and more on how implementation can provide an opportunity for teachers to deepen and extend their understanding of their work. For instance, it may be useful to openly acknowledge that change can be difficult both personally and professionally, and that uncertainty and frustration are part of learning a new instructional strategy. As well, teachers can be reminded that, while implementing the innovation, they will need to make changes to it. Further, they should understand that many trials are usually required with a new model of teaching before a comfortable, flexible level of use is achieved (Joyce and Showers, 1988) and that it can take up to two years to implement some changes such as cooperative learning (Hall and Loucks, 1977; Johnson and Johnson, 1989).

A second implication for the design of sessions has to do with the importance of the climate that is established (Simmons and Schuette,1988).

Instructional change requires participants to venture beyond the security of former patterns of thinking and acting. Part of helping them do so involves creating a climate where teachers feel that it is both possible and important for them to express uncertainty and articulate their values and beliefs (i.e., appreciative systems). Since this requires some degree of trust among participants, particular attention must be paid to support for risk-taking. Teachers, however, do not always take risks willingly. Some incentive to get participants started may be useful. One way to do this is to encourage them to use and adapt the innovation between sessions and then bring back their reflections or samples of student work for discussion with colleagues. Accountability to peers seems to help some teachers take this first step.

A useful way to create such a climate might be to incorporate action research into training. Using this approach, teachers begin with questions they have about working with student groups, develop solutions through discussion with colleagues, reading, observation and the application of workshop content, and then assess results in light of their beliefs and values. Sharan's (1980) Group Investigation is a useful way to organize groups for this type of research.

A third implication has to do with modelling. By modelling reflection, workshop leaders may help teachers gain insight into how to manage the ambiguity that often comes with implementation. For example, the workshop facilitator might "think aloud" while making decisions about how to organize groups, when to bring activities to a close, and what changes to make to the plan. Facilitators might also ask participants to think about ways

to create a classroom climate conducive to risk-taking and, as the session progresses, to share their observations and questions with each other.

A final implication is that teachers may require follow-up support after the training sessions are completed. No matter how effectively a workshop series is designed, the real work of implementation occurs in classrooms after the formal sessions are over. Ongoing and relevant support needs to come from administrators and district consultants. This means that administrators need to know what was dealt with in the training sessions, and be able to find ways to support teachers as they work through ambiguities. District consultants trained in the use of the innovation can meet with school-based groups or individuals to co-plan, co-teach and reflect on lessons and deal with issues that emerge during implementation.

School-Based Teacher Collaboration

Collegial support cannot end with the formal training sessions. Teachers need this ongoing support to implement complex instructional strategies. This may require the creation of school-based support groups of teachers who meet regularly to exchange information and discuss ambiguities. As they discuss their experiences and generate solutions together, they counter the norms of isolation and privatism that characterize teaching (Lortie, 1975). The strength of this form of collaboration is that, as teachers plan, teach and reflect together, they benefit from the expertise and experience of each other.

116

School-based teacher collaboration might also take the form of individual or small group action research projects. Action research introduces a more systematic approach to investigating questions, developing solutions and assessing outcomes than is normally found in informal discussion.

Any discussion of school-based teacher collaboration must acknowledge the practical problem of limited time. While this problem is a product of teachers' working conditions, Joyce and Showers (1988) suggest a number of ways to find time for teacher collaboration within current school organization.

Recommendations for Further Research

The thesis argued in this study now needs further empirical research. We know very little about the kinds of ambiguities that teachers experience as they implement various classroom changes, or the details of how ambiguities are actually resolved, and under what conditions. The writings of Schön (1983, 1987), Lortie (1975) and Lampert (1985, 1986) only provide us with a general picture. Surveys and case studies could provide more specific understanding of implementation.

If the management of ambiguity is an important part of implementation, there are a number of questions that deserve further examination. What strategies are used by teachers who are good at managing ambiguity? What are some common characteristics of their classrooms? What features of the working environment make this management easier for teachers? How do teachers who initially have trouble managing ambiguity get

better at it? Are types of ambiguity dependent on the number of years of experience a teacher has? What role do supervisors, formal workshops, and colleagues have in the development of the teacher's capacity for tolerating and managing ambiguity? Such research could illustrate the kinds of dilemmas teachers face during implementation.

Research could also be conducted on how students experience the ambiguities associated with classroom change. What is it like for them when the teacher seeks to modify the classroom's social structure? What is the impact of uncertainties on the classroom environment, or on peer relationships outside the classroom? Such investigation might help teachers better understand the student's perspective on change. Fullan (1991) shows that we have very little research knowledge about the student's role in, or experience of, classroom change.

REFERENCES

Bamburger, J. (1978). Intuitive and formal musical knowing: parables of cognitive dissonance. In *The arts, cognition, and basic skills. Second annual yearbook on research in the arts and aesthetics education.* CEMREL.

Bellanca, J., & Fogarty, R. (1991). *Blueprints for thinking in the cooperative classroom.* Palantine, IL: Skylight.

Berman, P., & McLaughlin, M. (1976) Implementation of educational innovation. *The Educational Forum, 40*(3), 345-370.

Bruner, J. (1986). *Actual worlds, possible minds.* Cambridge, Mass.: Harvard University Press.

Clandinin, D. J. (1986). *Classroom practice: Teacher images in action.* London: Falmer Press.

Clark, C., & Lampert, M. (1986). The study of teacher thinking: Implications for teacher education. *Journal of Teacher Education,* Sept.- Oct., 27-31.

Connelly, F., & Dienes, B. (1982). The teacher's role in curriculum planning: A case study. *Studies in Curriculum Decision Making.* Toronto: OISE Press.

Court, D. (1988). *Questions of value: An inquiry into the nature of research on teaching thinking.* Unpublished Doctoral Dissertation. University of British Columbia.

Cuban, L. (1982). Persistent instruction: the high school classroom, 1990-1980. *Phi Delta Kappan 61*(2).

Dewey, J. (1938). *Logic: the theory of inquiry.* New York: Holt, Rinehart and Winston.

Doyle, W., & Ponder, G. (1975). Classroom ecology: Some concerns about a neglected dimension of research on teaching. *Contemporary Education, 46*(3), 183-188.

Duckworth, E. (1979) Learning with breadth and depth. The Catherine Molony Memorial Lecture, City College School of Education Workshop, Centre for Open Education, June.

Dunkin, M., & Biddle, B. (1974). *The study of teaching*. New York: Holt, Rinehart, and Winston.

Elbaz, F. (1983). The teacher's "practical knowledge": Report of a case study. *Curriculum Inquiry, 11*(1), 43-71.

Fenstermacher, G. (1986). In M.G. Wittrock (Ed.), *Handbook of research on teaching 3rd ed*, (pp. 37-49). New York: Macmillan.

Floden, R.E., & Clark, C.M. (1988) Preparing teachers for uncertainty. *Teachers College Record, 89*(4), 29-42.

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

Fullan, M. (1991). *The new meaning of educational change*. Toronto: OISE Press.

Gage, N.L. (1978).*The scientific basis of the art of teaching*. New York: Teacher's College Press.

Gibboney, R.A. (1987). A critique of Madeline Hunter's teaching model from Dewey's perspective. *Educational Leadership*, 45(4), 46-50.

Glickman, C. (1987). Unlocking school reform: Uncertainty as a condition of professionalism. *Phi Delta Kappan*, October, 120-122.

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

Grimmett, P., & Erickson, G. (Eds.). (1989). *Reflection in teacher education*. Vancouver: Pacific Educational Press.

Hall, G., & Loucks, S. (1977). A developmental model for determining whether the treatment is actually implemented. *American Educational Research Journal, 14* (3), 52-56.

Hargreaves, D.H. (1979). A phenomenological approach to classroom decision making". In J. Eggleston (Ed.), *Teacher decision making in the classroom*. London: Routledge and Kegan Paul.

Hunter, M. (1984). Knowing, Teaching and Supervising. In P. Hosford (Ed.), *Using what we know about teaching*. Alexandria, Va: Association for Supervision and Curriculum Development.

Johnson, D., & Johnson, R. (1988). *Advanced cooperative learning*. Edina, MN: Interaction Book Company.

Johnson, D., & Johnson, R. (1989). *Competition and cooperation: Theory and research.* Edina, MN: Interaction Book Company.

Johnson, D., Johnson, R., Johnson & Holubec, E. (1988). *Cooperation in the classroom.* Edina, MN: Interaction Book Company.

Joyce, B., & Showers, B. (1983). *Power in staff development through research on training.* Alexandria, VA: Association for Supervision and Curriculum Development.

Joyce, B., & Showers, B. (1988). *Student achievement through staff development.* New York: Longman.

Joyce, B. Showers, B., & Bennett, B. (1987). *Educational Leadership, (45)3,* 77-87.

Lakoff G., & Johnson, M. (1980). *Metaphors we live by.* Chicago: University of Chicago Press.

Lampert, M. (1985). How do teachers manage to teach? Perspectives on problems in practice. *Harvard Educational Review, 55*(2), 178-195.

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

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

Marris, P. (1975). *Loss and change.* New York: Anchor Press/Doubleday.

McMillan, J., & Schumacher, S. (1989). *Research in education; a conceptual introduction.* New York: Harper Collins.

Nemser, S.F. (1983). Learning to teach. In L. S. Schulman & B. Sykes, (Eds.). *Handbook of teaching and policy* (pp.150-170). New York: Longman.

Olson, J.K. (1980). Teacher constructs and curriculum change. *Journal of Curriculum Studies, 12*(1), 1-11.

Ryan, D. (1960). *Characteristics of teachers.* Washington, DC.: American Council of Education.

Sarason, S. (1971). *The culture of the school and the problem of change.* Boston: Allyn & Bacon.

Sarason, S. (1990). *The predictable failure of educational reform.* San Francisco: Jossey-Bass.

Schön, D. (1971). *Beyond the stable state.* New York: Norton.

Schön, D. (1983) *The reflective practitioner.* New York: Basic Books.

Schön, D. (1987) *Educating the reflective practitioner.* San Francisco: Jossey-Bass.

Sharan, S., & Hertz-Lazarowitz, R. (1980). A group investigation method of cooperative learning in the classroom. In S. Sharan, P. Hare, C. Webb, & R. Hertz-Lazarowitz (Eds.), *Cooperation in education* (pp. 14-46). Provo, UT: Brigham University Press.

Shavelson, R., & Stern, P. (1981). Research on teachers' pedagogical thoughts, judgments, decisions and behavior. *Review of Educational Research, 51*(4), 455-498.

Schwab, J. (1973). The practical 3: translation into curriculum. *School Review,* 81, 501-522.

Shulman, L. (1987). Knowledge and teaching: foundations of the new reform. *Harvard Educational Review,* 57(1), 1-22.

Simmons, J.M. & Schuette, M.K. (1988). Strengthening teachers' reflective decision making. *Journal of Staff Development,* 9(3),18-26.

Simmons, J.M. Sparks, G.M., Starko, A., Pasch, M., Colton, A., & Grinberg, J. (1989) "Exploring the structure of reflective pedagogical thinking in novice and expert teachers: The birth of a developmental taxonomy." Paper presented at the annual conference of the American Research Association, San Francisco, CA.

Sparks-Langer, G., & Berstein-Colton, A. (1991) Synthesis of research on teachers' reflective thinking. *Educational Leadership,* 48(6), 37-44.

Sternberg, R.J., & Caruso, D.R. (1985) Practical modes of knowing. In E. Eisner (Ed.), *Learning and teaching the ways of knowing, 84th Yearbook of the NSSE.* Chicago: University of Chicago Press.

Tyler, R. (1949). *Basic principles of curriculum and instruction.* Chicago: The University of Chicago Press.

Webster's new collegiate dictionary (1974). Toronto: Thomas Allen & Son Ltd.

Werner, W. (1987). Curriculum and socialization. In R. Ghosh & D. Ray (Eds.), *Social change and education in Canada.* Toronto: Harcourt, Brace, Jovanovich.

Werner, W. (1987). Training for curriculum implementation. *Pacific Education* 1:1, 40-53.

Wise, A. (1977). Why educational policies fail: The hyperrationalization hypothesis. *Curriculum Studies*, 9(1), 43-57.

Wittrock, M.G. (Ed.) (1986). *Handbook of research on teaching 3rd ed.* New York: Macmillan.

APPENDIX A

Interview Schedule #1

CLUSTER 1: COOPERATIVE LEARNING

A. The Innovation

    A.1. Why did you decide to register for the upcoming workshop series on cooperative learning?

    A.2. What does the term "cooperative learning" mean for you?

    A.3. What do you think cooperative learning will look like once it is operating in your classroom? What is the source of this expectation?

B. The Students

    B.1. How do you think your students will benefit from being involved in cooperative learning?

        B.1.1. as a group

        B.1.2. as individuals

        B.1.3. socially

        B.1.4. academically

        B.1.5. other benefits

    B.2. What new skills and understandings do you think your students will need to develop in order to be able to work cooperatively?

        B.2.1. Will there be any role changes for students as they work in a cooperative classroom?

C. The Teacher

    C.1. How do you think you will benefit by working with cooperative learning?

    C.2. What new skills and understandings do you think you will need in order to work with cooperative leaning?

        C.2.1. Will there be any changes in your role as a teacher as you work with cooperative learning?

C.3. What strengths do you feel you have that will permit you to work with cooperative leaning?

C.4. What types of problems do you anticipate as you try to set up cooperative learning in your classroom?

C.5. How do you think cooperative learning will fit with what you are already doing in your classroom?

CLUSTER 2: THE TEACHER'S UNDERSTANDING

D. Professional Understanding

D.1. What has been significant in helping you to become interested in cooperative learning? You might want to comment on:

D.1.1. professional workshops

D.1.2. colleagues (teachers/administrators/consultants)

D.1.3. career advancement

D.1.4. individuals and experiences outside of your professional work

D.1.5. your own educational beliefs

D.1.6. other significant factors

D.2. How will you attempt to implement cooperative learning?

CLUSTER 3: THE CONTEXT

E. The School

E.1. In what ways do you expect your school to help facilitate your implementation of cooperative learning? You might want to comment on:

E.1.1. colleagues

E.1.2. administrators

E.1.3. other school resources

F. The School District

F.1. In what ways do you expect the school district to be important to you as you try to implement cooperative learning? You may wish to comment on:

F.1.1. district organization

F.1.2. district support in the form of workshops, release time, consultants

F.1.3. other district features

G. The Community

G.1. In your work with cooperative leaning, what role do you see the parents of your students playing?

APPENDIX B

Interview Schedule #2

Alice

1. Since our first interview you've had the opportunity to attend four days of workshops and have been able to work with cooperative learning for some months in your classroom. I provided you with a transcript of our last interview so that you might comment on your earlier thoughts in light of your recent experience. Were there any points you'd like to comment on before we begin our second interview?

2. In the past few months you've had the opportunity to work with cooperative learning. Could you describe how the workshops, your colleagues, principal or others have helped you in this process?

3. During our first interview you described cooperative leaning in this way: "The children work in groups to reach a group goal, but they are individually responsible for what they do. I guess the average, the sum of their marks, is also a group mark. It's not a group effort where one or two do all the work".
   - Do you have any comments about this earlier description?

4. In the light of your recent experience in workshops and in your classroom:
   - Do you have any disagreement with the Johnson's model? Why or why not?
   - What aspects of cooperative learning do you now consider to be the most important? Why?
   - Is there anything that seems less or no longer important? Why?
   - What are you doing about the things you don't understand in this approach? Why?

5. Have the workshops helped you in answering some of the questions you earlier had about developing responsibility in the children, or shifting the teacher's role in the classroom, shifting from content to process?

6. You mentioned in our last interview that you felt that cooperative learning would benefit your students by "enabling them to get along and make things work." How do you feel that cooperative learning has benefitted them in the way you imagined?

7. As well, you indicated that you felt that the students would become more "responsible." Has that occurred?

8. You said when we last met that the students would have to "practise" the various roles numerous times before they would be able to use them. How has this worked out?

9. Related to the roles, the question of time arose since you anticipated it would take quite a bit of time to cycle through the roles. How has that turned out?

10. You said you hoped that the children would develop a "concern" for others and not just for themselves or their best friends. How have you found this to be the case?

11. You introduced the idea that you wanted to become a "facilitator": really helping them along on an individual basis, and taking direction from them, and letting them build upon what they know. How has this occurred?

12. When we last spoke you said that sharing ideas with other teachers would be valuable to you as you sought to work with cooperative learning. You mentioned as well that their feedback could be useful to you. Did any opportunities for this type of sharing occur? Why or why not?

13. You talked about the importance of students "getting along with one another." How has cooperative learning been helpful to you in meeting this objective?

14. When we met initially you had some concern about not knowing everything about cooperative learning. The workshops were designed to impart a great deal of information. What role have the workshops played for you?

Marcel

1. Since our first interview you've had the opportunity to attend four days of workshops and have been able to work with cooperative learning for three months in your classroom. I provided you with a transcript of our last interview so that you might comment on your earlier thoughts in light of your recent experience. Were there any points you'd like to comment on before we begin our second interview?

2. In the past few months you've had the opportunity to work with cooperative learning. Could you describe how the workshops, your colleagues, principal or others have helped you in this process?

3. During our first interview you described cooperative leaning in this way:

   "Cooperative learning is a strategy or an approach to teaching and learning. It involves putting children in cooperative situations -- socially interactive situations -- whereby every individual in the group is accountable for himself and at the same time that person is accountable to the group. In other words, there's a group goal, sort of "sink or swim": they have to cooperate and work together to reach the group goal. At the same time there's an individual goal so that each person is individually accountable. You must have those two elements or, according to research, you're wasting your time; well, you're going to lose a lot of effectiveness. Those two goals, as far as I'm concerned, are the two most important. So it's group work."

   - Do you have any comments about this earlier description?

4. In the light of your recent experience in workshops and in your classroom:
   - Do you have any disagreement with the Johnson's model? Why or why not?
   - What aspects of cooperative learning do you now consider to be the most important? Why?
   - Is there anything that seems less or no longer important? Why?
   - What are you doing about the things you don't understand in this approach? Why?

5. Have the workshops helped you in answering some of the questions you earlier had about developing responsibility in the children, or shifting the teacher's role in the classroom, shifting from content to process?

6. You said in our last interview you hoped that cooperative learning would put more "responsibility on the children." How has this been the case?

7. You commented that "the teacher must give up your power and let the children take control" as you attempt to use cooperative learning. Do you still feel this to be true?

8. You mentioned that one of the most important things about teaching is not the content, it's the "process" and getting them (the students) to think. Do you feel that cooperative learning has helped you clarify and work in the areas of "process" and "thinking"?

9. You mentioned that you need someone in the school to serve as a "sounding board" as you attempt to implement cooperative learning. What does this mean, and how has that turned out?

10. You indicated that you had two areas of concern as you worked with cooperative learning, the first being a lack of time. Why is this (not) a concern for you?

11. The second concern was the need to "emphasize the positive" in debriefing group activities. How has that gone?

12. During our last interview we discussed the percentage of time you used cooperative learning. Has that percentage varied over the course of the past few months? Why or why not?

13. How do you decide when it is appropriate to use cooperative learning with your students?

14. You talked of creating a "culture" or "climate" in your classroom within which cooperative learning would be one of the components. How have you gone about creating this "climate?"

15. You described cooperative learning as being "a framework" in which you could "plug other ideas." "Constructivism" was also mentioned as being another framework which you were using. Could you elaborate on how you use these frameworks?

16. You said that you were "working" on these two "frameworks." When you work on a framework, what is it that you do?

17. You indicated that you were overworked and that it was difficult to get time to reflect. I'd like to hear more about how you deal with this situation as you try to implement cooperative learning.

APPENDIX C

Interview Schedule #3

Alice

Part 1

1. We began these interview last October and since that time you've attended a series of workshops and had an extended opportunity to work with cooperative learning in your classroom. Last week I provided you with a transcript of our last interview. Are there any additional comments you would like to make about some of the issues you raised in the transcript?
2. Were you surprised by any of the comments you made at that time? Why?
3. Are there any comments which are no longer true? Why?

Part 2

4. During the last interview, you spoke of wanting student encouragement of each other in a group to become more "natural." How has this occurred? Why?
5. You intended to rotate roles within a group, and to give students more opportunity to choose their roles. Has this occurred? Why or why not?
6. During the course of the last interview we talked extensively about the assigning of roles within groups. Do you have any changed thoughts on this topic? Why?
7. During the course of our discussions, becoming a "facilitator" or a "coach" to your students seems to have been one of your concerns. How have your views and classroom practice changed for you?
8. You mentioned the last time we talked that you were "trying" cooperative learning. What stage are you at now?

132

9. Are there any additional comments you would like to make about how your understanding of cooperative learning has changed?

10. In undertaking to master a new teaching technique such as cooperative learning, teachers inevitably encounter problems. What problems did you encounter this year as you worked with cooperative learning?

11. What challenges do you see yourself facing as you continue to work with cooperative learning?

12. What do you consider was your greatest success in developing your skills in the use of cooperative learning? How did this occur?

13. If Roger and David Johnson were to walk into your classroom knowing that you had attended their workshops, what questions do you think they would have for you? How would you answer?

Marcel

Part 1

1. We began these interview last October and since that time you've attended a series of workshops and had an extended opportunity to work with cooperative learning in your classroom. Last week I provided you with a transcript of our last interview. Are there any additional comments you would like to make about some of the issues you raised in the transcript?
2. Were you surprised by any of the comments you made at that time? Why?
3. Are there any comments which are no longer true? Why?

Part 2

4. You mentioned on the transcript that you felt insecure about taking the risks that may be involved when implementing cooperative learning. Is this still the case? Why or why not?
5. You said that, "Although I know I'm going in the right way, I can't explain why." Do you still think that cooperative learning is important? Are you better able to explain the reasons now? Why?
6. You described the process you were going through as you tried to develop your skill in using cooperative learning as "becoming more focussed." Is this still going on?
7. During the course of our last interview you described a number of difficulties that arose as you were working with cooperative learning: praising individuals, grouping students, clarifying the teacher's role, evaluating group work, and assigning marks. Are these still difficulties? Have you found any solutions?
8. During our last interview you said that you were moving from a more to a less structured use of cooperative learning. Has this process still going on? Why?
9. You mentioned in the transcript that the measure of cooperative learning being in place lies in the proportion of time that the teacher spends speaking as compared to the amount of interaction there is amongst

students. Do you still hold this view? Are there any other ways that you use to guage whether cooperative learning is in place?

10. Are there any further comments you'd like to make on how your views about cooperative learning have changed?

Part 3

11. In undertaking to master a new teaching technique such as cooperative learning, teachers inevitably encounter problems. What problems did you encounter this year as you worked with cooperative learning?

12. What challenges do you see yourself facing as you continue to work with cooperative learning?

13. What do you consider was your greatest success in developing your skills in the use of cooperative learning? How did this occur?

14. If Roger and David Johnson were to walk into your classroom knowing that you had attended their workshops, what questions do you think they would have for you? How would you answer?