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THE NATURE OF DISCOURSE
IN SMALL GROUP DISCUSSIONS DURING REFLECTIVE TEACHING

DISSERTATION

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of The Ohio State University

By

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1995

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ACKNOWLEDGEMENTS

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Finally I express my gratitude and devotion to Jesus Christ who is the source of truth and "in whom are hid all the treasures of wisdom and knowledge."
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CHAPTER I
INTRODUCTION

Overview

The preparation of teachers and education in general has been the object of intense scrutiny during the past decade. Reports such as *A Nation at Risk* (1983) and the Carnegie Forum (1986) galvanized attention on real and perceived problems within contemporary schools. Teacher education has responded to such criticism and engaged in efforts to reconceptualize the nature of preservice education. Most notable, are efforts to establish teaching as a professional endeavor (Holmes, 1986). Among the sweeping changes, at the core of teacher education, is the now dominant belief that teaching should be reflective; teachers should carefully, deliberatively, and persistently consider their existing practices and values along with those found in the culture of schools.

One means of promoting reflective thought in teachers is Reflective Teaching, a laboratory-based strategy designed to involve preservice teachers in the complete act of teaching and conceived to promote habits of deliberative, reflective thought. This study is an effort to examine the characteristics of preservice teachers' dialogue during Reflective Teaching in an effort to better understand the process of Reflective Teaching and the thinking of preservice teachers.
What follows, in this chapter, is a summary of the issues that impact the preparation of reflective teachers. In addition, the research questions, justification for the study, and assumptions and limitations are presented.

**Background of the Study**

The intricacies of the educational enterprise present teachers with a highly complex role. As such, teachers are faced with a multidimensional role which is difficult to define since the purposes of schools and the role of teachers are seen to be interwoven within the context of teaching. Therefore what might be appropriate preparation for one classroom context would be woefully inadequate for another (Heck & Williams, 1984; Howsam, 1976). Furthermore, the dramatic changes in social mandates, philosophical priorities, and technological advances also serve to move the educational target.

In a diverse society, the aims of schooling are viewed from multiple perspectives with various groups envisioning different priorities for education. Commenting on the expectations that people hold for schools, Goodlad said, "we Americans want it all ... We expect schools to teach fundamentals, expose students to the world's knowledge, socialize them into our ways of governing and conducting economic affairs, develop their individual talents, and 'civilize them' ..." (Goodlad, 1983, p. 468). Given the complexity of teaching and potential contexts, it is clear that teacher education can not provide preservice teachers with a prescription for every future challenge.
In order to deal with the complexities of teaching, teacher educators have increasingly supported an inquiry approach to teacher preparation in which preservice students are taught to think deeply about educational phenomena and their consequences. Clark (1986) notes that since 1975, teachers have come to be perceived as reflective professionals who construct meaning. With this changing perception, teacher education has been challenged to emphasize reflective thinking in professional practice and the development of professional judgment (Holmes, 1986; Schon, 1987; Zeichner, 1979). In Gore's (1987) words, reflection has become part of the language of teacher education. Indeed Zeichner (1990) suggests that reflection in teacher education has become a dominant focus. He comments, "There isn't a single teacher educator today who would claim that he or she isn't concerned about preparing teachers who are reflective."

Although a reflective approach is valued, it is not empirically grounded. In his overview of the literature on reflection, Zeichner (1987) found little research concerning the effects of a reflective approach in preservice programs. Moreover some evidence indicates that such programs may prove unsuccessful for students not given to reflection (Korthagen & Verkuyl, 1987).

In spite of the lack of empirical support, teacher educators have emphasized a reflective approach to counteract what is perceived to be a routine approach to teaching. Research indicates that preservice teachers generally develop a utilitarian perspective of teaching (Tabachnick, 1980). At the conclusion of their preservice education students are often characterized as "passive technicians who merely learn to execute pre-packaged instructional programs" (Goodman, 1986). Furthermore,
preservice teachers in general uncritically accept and model their cooperating teacher's classroom practices (Tabachnick, 1980).

The dichotomy that exists between the goals of teacher educators to develop reflective teachers and the resulting technical orientation and unquestioned acceptance of routine educational practice can be attributed to several factors. First, students come to preservice programs with existing conceptions of teaching that are intractable (Ross, 1987; Zeichner & Liston, 1987). Students have spent their academic lives prior to their undergraduate education and in much of their collegiate work in the role of passive receivers of information. Consequently, students generally enter their preparation for teaching expecting to be given the answers and do not view teaching as inquiry (Korthagen, 1985). Thus students' conceptions are often impediments to reflection which must be "unlearned" in order to open their minds to reflection (Ross, 1987). The transition to the intellectual challenges of inquiry and reflection is therefore not easily achieved. Second, coursework in pedagogy and methods courses have typically been taught with an overdependence on lecture and with a disregard for the very methodologies being presented (Cruickshank, 1985, p. 81). Further, Ross and Hannay (1986) concluded, "...teaching preservice teachers to use reflective inquiry to investigate their own teaching practices and to make those practices problematic would appear to be an appropriate function of teacher education" (p. 12). The reality is that, "While decrying the practices of the public school system, methods instructors are employing similar techniques. The passivity questioned in the public school may not differ from the passivity of the university classroom" (Ross & Hannay, p. 12).
In light of the previous discussion, it is not surprising that teacher educators have reported significant difficulties and unfulfilling results in attempting to develop reflective practice in preservice students (Korthagen, 1985; Zeichner & Liston, 1987). Systematic study of instructional strategies and programmatic models is needed to guide the development and implementation of reflective teaching programs.

In view of the widespread acceptance of a reflective orientation to preservice teacher preparation, instruction in teacher education should afford preservice teachers the opportunity to develop a habit of reflecting on and learning from their practice of teaching. Moreover, teachers must cultivate the practice of thinking deeply and with critical reflection in order to engender the kind of "critical thinking they strive to develop in students, combining tough-minded instruction with a penchant for inquiry" (Holmes, 1986, p.28). Consequently, instruction in teacher education should include strategies which engender the ability of students to reflect on their own teaching.

One such strategy, Reflective Teaching, was developed at The Ohio State University by Donald R. Cruickshank (1980) and is conceived to engage preservice students in the complete act of teaching. Foundational to this strategy, is its use of a laboratory approach affording an objective analysis of teaching. Consequently, Reflective Teaching emphasizes feedback and discussion concerning learner achievement and satisfaction to inform instruction.

Reflective Teaching is a laboratory teaching experience “that provides participants an opportunity to practice teaching, to determine its success, and to generate knowledge about teaching and learning that should result in improved future classroom performance” (Cruickshank, 1991, p. 2). It should be noted that
Reflective Teaching is a *means* to an end and an *end* in itself (Cruickshank, 1985). Thus its efficacy lies in informed use. Of its use, Cruickshank (1985) wrote:

> Reflective Teaching is an effort to increase teacher wisdom by engaging preservice students in controlled, on-campus teaching where their behavior is observable and measurable and where their teaching can be examined and thought about in ways that will enhance subsequent performance. (p. 97)

**Statement of the Problem**

The purpose of this study is to expand the empirical knowledge in teacher education concerning processes involved in reflection during Reflective Teaching lessons. The specific question and subquestions addressed in this investigation are:

1. What is the nature of the discourse that occurs during the small group discussions of Reflective Teaching?

Subquestions related to the primary research question are:

1. What types of discourse are expressed most frequently during small group discussions?

2. What is the degree of reflection of the group discourse during small group discussions?

3. What is the content of reflection during small group discussions?
4. Do designated teachers and learners make use of research/theory-based educational knowledge during small group discussions?

5. Do designated teachers and learners exhibit different patterns of reflection during small group discussions?

6. What relationship exists between Reflective Teaching variables and the discourse category variables during Reflective Teaching small group discussion?

Justification for the Study

Reflective Teaching is a potentially powerful tool for promoting reflection. Students can consider the important domains of teaching: planning, presentation, clarity, evaluation, use of instructional materials, etc. (Cruickshank, 1980). Historically, little research has been conducted on Reflective Teaching. According to Cruickshank (1987), a number of unanswered questions deserve investigation. He notes that two types of studies are needed: (1) research to reveal the benefits that participants derive from Reflective Teaching, and (2) research to describe and analyze the behavior of participants during Reflective Teaching to gain insight into its potential outcomes and benefits.

Troyer (1988) makes similar recommendations for continued inquiry into Reflective Teaching in her dissertation. Specifically she suggested research:
1. that would describe and analyze the behavior of participants during Reflective Teaching in order to gain insight into its processes and benefits.

2. Research that would examine the nature of the discourse occurring during the small and large group discussions an Reflective Teaching.

This study is a response to the second area suggested by Cruickshank (1987) and Troyer (1988). The paucity of research on Reflective Teaching coupled with the promise of this strategy to promote good habits of thought about teaching (Cruickshank, 1985), provides impetus for this study. Additionally, the need to reconceive teacher education on the basis of a more scholarly, professional and clinical basis (Holmes, 1986) is reason to expand the knowledge base concerning instructional vehicles such as Reflective Teaching. Finally foundational research in Reflective Teaching is also needed to respond to concerns that have been raised regarding its general lack of empirical support (Gore, 1987).

Recent findings by Metcalf (1994) also provide powerful impetus for this study. In his metanalysis of the effectiveness of laboratory vs. field-based experiences in preservice teacher preparation, Metcalf found that laboratory experiences, when used "wisely and appropriately, are superior to extensive and extended field-based experiences" (Metcalf, 1994). Metcalf's findings provide a compelling rationale for this study since the purpose of this investigation is to develop an broader understanding of the processes involved in Reflective Teaching so as to inform the implementation of this laboratory experience.

Small group discussions have been targeted specifically in this study as a means to observe preservice teachers in an arena where they exercise essential
control over the questions, issues, and topics of discussion. Small group participants decide what they will discuss based on their interests and needs in the context of the teaching and learning experience. As such, these discussions provide a view into the thoughts, interests, and concerns of preservice teachers regarding educational phenomena. Therefore, small group discussions are a crucial element in Reflective Teaching in which participants reveal their thought processes and demonstrate authentic outcomes of the Reflective Teaching process.

Therefore the results of this study are intended to extend the existing knowledge regarding the thought processes that occur during Reflective Teaching. In so doing, this study is also intended to extend and lend support to the work of Zeichner and Liston (1985) and Troyer (1988) concerning the generalized process of reflection in preservice students. Knowing more about the way preservice students are inclined to think about educational phenomena will guide teacher educators in developing theoretical models to inform future research and development of reflective approaches to teacher preparation.

Definitions

For the purpose of this study the following definitions will be employed:

**Reflective thinking:** “Active, persistent, and careful consideration of knowledge, beliefs, values and experiences in light of the grounds which support them and in light of their consequences” (Troyer, 1988).
Reflective Teaching: "A peer teaching exercise developed by Cruickshank and associates (1980) at the Ohio State University for the purpose of providing preservice teachers with the opportunity to participate in the complete act of teaching (planning, instruction, and evaluation) and to reflect upon the teaching/learning processes that occurred" (Troyer, 1988).

Degree of reflectivity: The amount of reflectivity that is recorded through a rating of the Reflective Teaching Index developed by Zeichner and Liston (1985).

Reflective Teaching Index: "A rating system developed by Zeichner and Liston (1985), based upon the work of van Manen (1977) and Gauthier (1963), to assess the quality of discourse by categorizing thought units into four types of practical discourse: factual discourse, prudential discourse, justificatory discourse, and critical discourse. Each of these categories is further divided into several subcategories" (Troyer, 1988). Appendix A contains a complete list of categories and subcategories employed in the RTI.

Content of Discourse: The themes or issues raised in small group discussion within each of the categories of discourse found in the Reflective Teaching Index.

Assumptions and Limitations and Delimitations

Assumptions

For the purposes of this investigation, the following assumptions are acknowledged:
1. Reflective practice in teaching is a desirable goal and hence an appropriate focus for preservice education.

2. Reflective thought can be promoted in preservice teachers irrespective of their personality and learning style.

3. The Reflective Teaching Index (Zeichner & Liston, 1985) afforded a valid and reliable measure of the degree to which students are able to analyze and reflect upon teaching under the conditions of this study.

**Limitations**

This study is subject to several limitations which are acknowledge below:

1. Because the context of Reflective Teaching is within laboratory experience, reflection may be limited in authenticity and scope.

2. Because the methods classes being investigated were composed entirely of secondary education majors, the subjects in this study were limited to secondary education students.

3. Since the data on student discourse during Reflective Teaching small groups discussions will be captured on videotaping, it is reasonable to believe that videotaping the Reflective Teaching sessions affected the setting and thus the discussion of participants to some degree.
Delimitations

This study is subject to several delimitations which are acknowledge below:

1. The small sample size (n=36) was imposed on the study due to the available resources of the researcher.
2. The Reflective Teaching Lessons used in this study were limited to cognitive tasks (Origami is cognitive/psychomotor) in order to standardize the achievement measures.

Summary

A reflective approach to teaching enjoys wide and entrenched acceptance among teacher educators and has come to be regarded as the dominant paradigm in the professional preparation of teachers. Although reflective teaching is widely accepted, it is not theoretically or empirically grounded. The problems that teacher educators have confronted in attempting to implement reflective programs and strategies is suggestive of the lack of a research foundation in reflective teaching.

This investigation is intended to expand the knowledge concerning reflective teaching in general and, more specifically, the instructional strategy, Reflective Teaching.
CHAPTER II
REVIEW OF RELATED LITERATURE

Introduction

A reflective approach to teacher education has come to be regarded as an integrative focus for program development (Bullough, 1989). Under the general term inquiry-oriented teacher education (Tom, 1985), a reflective approach has risen to unprecedented status as a paradigm in teacher preparation (Bullough, 1989).

This review of literature is intended to examine the construct of reflection in the context of teacher preparation programs. In the first section, the theoretical, philosophical and cognitive foundations of a reflective approach to teacher education are examined. In the second section, literature concerning the application of reflectivity in preservice programs and related research is reviewed. The third section contains a review of the literature on "Reflective Teaching," a specific laboratory strategy developed at The Ohio State University designed to promote reflection in preservice teachers.

For the purposes of this study, the terms reflection, reflectivity, reflective thought, and reflective thinking will be used to refer to, an internal consideration of a problem or concern, in light of past experience and future consequences, in order to develop new insights and understandings. Furthermore the broader term, inquiry-oriented teacher education will be understood as a programmatic approach while reflective practice or reflective action (Dewey, 1933) are conceived as the goal.
The Nature of Reflective Teaching

Reflective thought, as a philosophical conception, is an idea with an ancient ancestry. Many that write about reflection evoke John Dewey as the 20th century educator most prominent in developing the paradigm of a reflective teacher. Dewey articulated his conception of reflection first in 1903 in a book entitled *How We Think* and later revised this work under the same title in 1933. In this text he defined reflection as, "Active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and further conclusions to which it tends, constitutes reflective thought." (Dewey, 1933, p.9). Further Dewey (1933) proposed that reflective thinking "involves (1) a state of doubt, hesitation, perplexity, mental difficulty, in which thinking originates, and (2) an act of searching, hunting, inquiring, to find material that will resolve the doubt settle and dispose the perplexity." (p.12) Contemporary use of the term "reflection," emerged in the later part of the 1970’s and the beginning of the 1980’s. The two individuals most credited with this development are Schön and van Manen.

Max van Manen (1977) theorized three distinct ways of knowing and modes of being practical. His first level of reflection involves what he calls the principle of technological progress. Reflection at this level is driven by economy, efficiency, and effect and involves practical choices between instrumental means to achieve given ends. At this level of reflection, teachers are concerned with the effectiveness of their teaching methods and student learning in relation to the methods employed. van Manen’s second level involves inquiry to determine the value of commitments to educational choices. This level places the reflective focus on justification of educational practice in terms of student characteristics and the subject matter.
Teachers consequently focus on questions of why certain educational practices are used. The third level of reflection in van Manen's scheme deals with socio-political problems and questions created in a social context that defines the worthiness of the question. Teachers reflecting on this level examine the relationship between intended and unintended school practices and societal expectations.

A number of teachers educators (e.g. Beyer & Apple, 1988; Gore, 1987; Ross & Hannay, 1986; Smyth, 1989; Tom, 1985; Zeichner, 1987) have embraced Dewey's and van Manen's conceptions of reflective teaching and emphasize van Manen's third level of reflection as a means of counteracting the dominant "technocratic orientation" of teacher education (Smyth, 1989). These educators are not unconcerned with developing technical skill in preservice teachers, however they believe that too often reflection on behavioral skills is practiced to the exclusion of social and moral purposes to which education should be directed (Gore, 1987). Thus, in the view of this group of teacher educators, marked differences exists in the focus of reflection emphasized by various advocates of reflective teaching.

The focus of reflection is not the only dimension of reflection that tends to separate teacher educators in their approaches to reflection and inquiry-based preservice training. As a means of identifying various philosophical and theoretical positions on inquiry-based teacher preparation, Tom (1985) has developed a useful construct for comparing approaches to reflectivity. He proposed three dimensions of inquiry to investigate the differences among various approaches to reflective inquiry in teacher education.

The first of these relates to the previous discussion and involves an individual's reflective focus which Tom (1985) designates as the arena of the
problematic. It is generally believed that reflection begins, as Dewey maintained, with something that is problematic (Tom, 1985). Tom asserts that teacher educators are aligned in the proposition that “making the teaching situation problematic is central to inquiry.” By this he means that reflection must be stimulated by creating situations that are problematic or by inducing students to consider the inherent problems in educational phenomena in order to consider alternatives to established practice. Where teacher educators separate themselves is in the nature of what is made problematic. Therefore at one end of this continuum, individuals focus on making the teaching-learning process problematic, while at the other end individuals are concerned with problematizing the ethics underlying teaching and society at large.

The second dimension in Tom’s (1985) scheme is the model of inquiry. These models are conceived based upon their scope (knowledge or knowledge/action) and degree of rigor (commonsense inquiry or disciplined inquiry). Therefore at one end of this continuum, models of inquiry employ low rigor and a narrow scope of inquiry focused on knowledge while at the other end inquiry is considered “disciplined” and focused on knowledge and action.

The third dimension Tom proposes is the ontological status of educational phenomena; one’s view of the reality of educational phenomena. These views range from those that consider educational phenomena as naturally occurring and thus static over time to those that consider educational phenomena to be socially constructed (conceived or invented by man) and thus highly dynamic. This dimension separates various proponents based on their view of reality or the nature of educational phenomena. Therefore while some consider educational phenomena to behave predictably, others hold a more relativistic view of phenomena as socially
constructed. Tom's contention is that the subject of one's reflection is determined by their ontological commitment (Tom, 1985).

In making comparative distinctions between the various positions reflected in Tom's continuum, it is helpful to look at the extremes represented. At one end, Tom (1985) places researchers like Brophy who view educational phenomena as real, lasting, and absolute. To them the way children and teachers behave and interact with knowledge is as natural as gravity and is therefore predictable. At this end of the continuum, the arena of the problematic is limited to the teaching and learning process and the model of inquiry applied is disciplined and rigorous scientific inquiry. At the other end of the ontological spectrum, with which Tom is himself aligned (Tom, 1985), he places individuals like Zeichner and Kohl. The ontological view of this position is that educational phenomena is a human invention, as is all of society, and is therefore highly dynamic and changeable. The problematic becomes the entire socio-political arena of schools in society, encompassing the political and ethical principles that undergird education.

Within the framework of these three dimensions of inquiry, the literature on reflective teaching reveals that teacher educators are separated most sharply concerning their focus of reflection (arena of the problematic) and their ontological commitment. The focus of reflection is largely the subject of van Manen's work and has been discussed above. What follows is a review of the epistemological distinctions which lead to varying conceptions of reflective teaching.

Schön (1983) proposed an alternative way of knowing and reflection from what he considers to be "the dominant epistemology of practice" in professional education (p. 21). Schön characterized the dominant epistemology as "technical
rationality” which he defined as an unreflective overreliance on technology and the scientific method.

Schön (1983) developed his notion of reflective practice by first studying the work of architects, city planners, managers, and psychotherapists and how they reflected on their work. Schön characterized the epistemology of his research subjects as one of "knowing in action" (p. 49) which he described as knowledge that is inherent in the action. Such knowledge is based upon the past experience of the practitioner interacting within specific situations. He found that rather than relying on a traditional linear problem solving scheme, they employed an intuitive and reflexive process of choosing what they thought to be the best solution corresponding to an agreed-upon goal.

Schön's (1983) other notion of professional practice involves a cognitive process that he termed "reflection-in-action" (p. 54). In his view, reflection-in-action involves "feeling," "seeing," and "noticing" what is happening in a given situation, learning from contextual input, and thus adapting or adjusting one’s practice. Schön (1983) found that these professionals "framed" a problem by considering the situation in relation to past experience. This process of establishing the parameters of a problem focuses attention on key aspects of the situation being studied:

When we select the problem, we select what we will treat as the 'things' of the situation, we set the boundaries of our attention to it, and we impose upon it a coherence which allows us to say what is wrong and in what directions the situation needs to be changed. Problem setting is a process in which, interactively, we name the things to which we will attend and frame the context in which we will attend to them. (p. 40)
Defining the problem leads to possible solutions and an examination of the intended and unintended consequences. In this process, often new insights are gained from unanticipated outcomes which prompt a reexamination of the problem in light of new understandings.

How a practitioner views a situation and therefore frames a problem depends on their "conceptual repertoire": "a repertoire of examples, images, understandings, and actions ... including the whole of his experience insofar as it is accessible to him for understanding and action" (Schön, 1983 p. 138). The depth and breadth of a practitioner's conceptual repertoire largely determines their expertise or "artistry of professional practice" (Schön, p. 158).

Schön (1983) proposed that reflective practice is characterized by one who can think while acting and thus respond to uncertainty, uniqueness, and conflict. He focuses on the competence and artistry already present in skillful practice. Relatedly he believes that much of educational knowledge is tacit; that is, it is a mixture of elements that exist for unique situations and so are not completely generalizable. Schön conceives reflection as a dynamic interplay with the material of one's work to produce knowledge in action. Knowledge is constructed and reconstructed from practice; it is dynamic and situational and thus not easily reduced to rules and procedures. Therefore as Richardson (1990) has noted, "Schön found intelligence in the act itself rather than attempting to make the act seem intelligent.

Tremmel (1993) asserts that Schön's conception of reflective practice is a departure from a positivist view of technical rationality which he maintains is "a desire for solutions that hinders efforts to establish reflective practice in education." He also contrasts Schön's concept of the reflective process with three teacher educators.
(Ross, 1990; Pugach & Johnson, 1990; and Dewey, 1910) who have articulated an essentially linear view of reflection (see Table 1). Furthermore Tremmel maintains that the common feature of each of the approaches identified in Table 1 reflects a "pattern of scientific analysis that has come to represent what Schon believes is nothing more than the unreflective mind of technical rationality itself."
Table 1
Comparison of Reflective Processes of Teacher Educators

<table>
<thead>
<tr>
<th>Writer</th>
<th>Process of Reflection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ross (1990)</td>
<td>1. recognizing educational dilemmas; 2. responding to a dilemma by recognizing both similarities to other situations and the unique qualities of the particular situation; 3. framing and reframing the dilemma; 4. experimenting with the dilemma to discover the implications of various solutions; 5. examining the intended and unintended consequences of an implemented solution and evaluating it by determining whether the consequences are desirable. (p. 98)</td>
</tr>
<tr>
<td>Pugach &amp; Johnson</td>
<td>1. clarifying problems of practice by self-questioning in a guided learning situation, a strategy in which particular questions are posed and responded to as a means of reframing the nature of those problems; 2. summarizing the redefined problems; 3. generating possible solutions and predicting what might happen should they be utilized; 4. considering various ways of evaluating the effectiveness of the solution chosen. (p. 189)</td>
</tr>
<tr>
<td>Dewey (1910)</td>
<td>1. identifying a felt difficulty; 2. locating and defining the difficulty; 3. suggesting possible solutions; 4. developing potential consequences; 5. observing and experimenting with solutions and consequences to either accept or reject solutions. (p. 72)</td>
</tr>
</tbody>
</table>

Note: Adapted from Tremmel (1993)
In her analysis of the emergence of reflective teaching in the 1980's, Richardson (1990, p.12) summarizes the range of approaches into those that are "quite technical (Cruickshank & Applegate, 1981) to Deweyan ones (Korthagen, 1985; Zeichner & Liston, 1987) to those based on Schön (Russell, 1988)".

Richardson analyzes these approaches in terms of three conditions necessary for general acceptance in teacher education: (1) "potential for improvement of the status of teaching; (2) the validity of the concept for the ways teachers view themselves and teacher educators view teaching; and (3) a normative view of teaching that projects a content of teacher education that goes beyond a description of the processes of teaching" (p. 15). She notes that Schön's concepts of knowledge-in-action and reflection-in-action have "validating and legitimizing qualities. They describe a way of thinking in action that makes sense to practitioners and that applies to practitioners in many different professions" (p. 16). Richardson also notes that Schön's conceptualization of reflection does not by nature fulfill the normative function for selecting the substance of teacher education (p. 16), but that Dewey's notion of the moral teacher holds such normative promise (p. 14). Therefore Richardson concludes that a synthesis of Dewey's critical approach and Schön's reflection/action processes could meet the three conditions that she postulates are the necessary impetus for practice in teacher education.

In summary, all of the proponents of reflective teaching share common ground in their view of reflection but are divided over certain philosophical issues. All those that write about reflective teaching are concerned with developing teachers who will approach their work thoughtfully and examine the intended and unintended consequences of their actions. It appears, however, that teacher educators are
divided along two issues: (1) their view of the nature of educational phenomena and (2) the focus of reflective thought. Some teacher educators view educational phenomena as predictable and generalizable across different contexts while others believe that educational phenomena is context specific cannot be generalized from one situation to another. Therefore in the former view teachers bring meaning to the educational arena in order to analyze and interpret events, issues and problems. In the latter view, the focus is placed on teachers deriving knowledge from their involvement in an educational context in order to determine appropriate reflective action concerning educational events, issues and problems.

Noffke and Brennan (1988) suggest a reconceptualization of the levels of reflective thought without the "implicit elitism" that relegates much of teachers' thinking to the practical or technical realm where it is seen to be less significant (Noffke & Brennan, 1988). They argue that all teachers "think carefully about what they do" (Noffke & Brennan) and that conceptions about reflective teaching should value the critical thought in which teachers engage. Furthermore Noffke and Brennan note that the current literature on what teachers do and think about may not be sensitive enough to appreciate the complex problems encountered by teachers and the level of thought achieved by teachers. They suggest a reality check by saying, "there must be an acknowledgment that much of teacher reflection is, of necessity, manifestly concrete." Also, with regard to "technical skills," Noffke and Brennan assert that such skills are essential and should not be denigrated in any conception of reflective teaching. Finally in the realm of values and purposes of reflective teaching, they maintain that, "justice and equality may be less salient (in the context of the classroom) than caring or nurturing."
Finally it may be that reflective teachers are characterized more by what they *become* than what they do (Richardson, 1990). Thus reflective teachers become individuals who are contemplative about their work, caring in their relationships with colleagues, students and parents, and concerned with seizing the moral and ethical high ground.

**Cognitive Elements of Reflection**

Westerman (1991) observes that research in teacher thinking proliferated during the 1970's in response to Jackson's (1968) research on the complexity of the classroom. In the following discussion, the literature and research related to cognitive processes in teaching is reviewed in relation to reflective practice.

Although teacher educators do not, in general, explicitly connect their conceptions of reflection to constructivist philosophy, there is a strong constructivist influence at the core of reflective practice. Constructivism emphasizes the development of understanding and meaning-making from one's activity and experience. Boud, Keough, and Walker (1985), portray the process of reflection as "those intellectual and affective activities in which individuals engage to explore their experiences in order to lead to new understandings and appreciations" (p. 19). From a Piagetian perspective, meaning-making hinges on encounters with problematic phenomena "Meaningful learning occurs through reflection and resolution of cognitive conflict" (Fosnot, 1989). The previous statements, describing the process of psychological construction, parallel essential ideas in reflective practice. That is, reflective teachers bring to the educational arena a conceptual ecology which acts upon and is acted upon by the phenomenon of teaching in a process of assimilation and accommodation.
There is also a theme of empowerment in constructivism shown by Fosnot's assertion that, "learners need to be empowered to think and learn for themselves" (Fosnot, p. 5). Concerning the role of the teacher, Fosnot (1989, p. 137) maintains that teachers, "Rather than being told how to teach ... would construct their own pedagogy." Similar themes of empowerment are inherent in the concept of a reflective practitioner.

Shulman (1987) outlined six categories of knowledge which teachers use in reflection: (1) content/subject-matter knowledge; (2) teaching methods and theory; (3) curriculum; (4) characteristics of learners; (5) teaching contexts; and (6) educational purposes. Teachers conceptualize "pedagogical content knowledge" (categories one through three) to represent ideas to students through examples and metaphors (Shulman). Sparks-Langer and Colton (1991) note that most cognitive researchers have not explored the last two categories that represent reflection in van Manen's third level of reflective thought; the ethical and moral aims of education.

Cognitive researchers are also concerned with the way in which teachers organize their knowledge. Berliner (1986) proposed that teachers maintain cognitive structures or schemata that are organized networks of related knowledge and can be quickly appropriated. Studies of novice and expert teachers have suggested that schemata in experts are more complex and interconnected than beginning teachers (Berliner, 1986; Leinhardt & Greeno, 1986; Carter, Sabers, Cushing, Pinnegar & Berliner, 1988). This richer network of previously learned patterns of knowledge allow experts a produce a greater array of possible interpretations to a given event.
Westerman (1991) investigated the thinking of experienced teachers compared to novice teachers during three stages of decision making: preactive planning, interactive teaching, and postactive evaluation. She found that:

1. "expert's mental representations, including their goals, were based on a much more comprehensive view of the classroom whereas those of the novices had a much narrower scope."

2. expert teachers are able to integrate a variety of knowledges (i.e. knowledge of students, content knowledge, pedagogical knowledge) to analyze lesson objectives in order to establish adaptable goals for instruction.

3. During instruction, expert teachers are better able to draw on elaborate schemas about children to monitor children's behavior and learning. They are also able to adapt their goals to emerging student needs by processing information quickly during instruction.

4. Expert teachers are better able to see the learning task from their student's perspective.

The findings from Westerman's (1991) research were derived from observations of teachers engaged in the activity of reflection. That is, student teachers were involved in preactive conferencing, interactive videotaping and observing and discussing the videotaped lesson. Westerman concludes that the "results of this study suggest that novices can benefit from teacher education programs that provide systematic teaching of sound decision making during course work and student teaching."
The richer schemata of experts may also be related to their degree of automaticity in dealing with educational phenomena. Carter (1988) found that automaticity allows expert teachers to attend to more problematic and significant classroom events. In addition, a repertoire of scripts within the rich schemata of experienced teachers appears to enable them to adjust to unexpected changes in the classroom (Borko & Livingston, 1989). Researchers theorize that such schemata are formed through what is akin to Piagetian assimilation and accommodation that Greeno, Magone & Chaiklin (1979) refer to as creating meaning from perception.

A third area of interest for cognitive researchers involves the metacognitive processes of a teacher's thinking. Metacognitive processes allow teachers to monitor their actions and decisions in relation to intended or unintended consequences. Reflective teachers make tentative hypotheses concerning their actions and then tests these in a given situation. Leinhardt and Greeno (1986) explored metacognitive behavior in teachers noting that experienced teachers practice a greater degree of self-regulation than beginning teachers.

These three areas of cognitive research, use of knowledge, use of schemata, and metacognition correlate remarkably well to Schön's (1983, 1987) description of reflective practitioners. That is Schon also maintained that reflection involves the a process of problem-solving by "framing" a problem in relation to past experience. It allows the experienced practitioner to focus on the salient, form tentative hypotheses, and testing possible solutions (Schon, 1983).

Therefore cognitive psychology can inform efforts to promote reflection in preservice teachers. In addition, findings from cognitive research lend support to
Schon’s work which has become a key theoretical referent for reflective teacher education.

**Affective Aspects of Reflection**

Dewey (1933) identified three attitudes necessary for reflective action: open-mindedness, responsibility and wholeheartedness.

The first of these, open-mindedness is defined as:

"... freedom from prejudice, partisanship, and such other habits as close the mind and make it unwilling to consider new problems and entertain new ideas."

Dewey goes on to say that:

"It includes an active desire to listen to more sides than one; to give heed to facts from whatever source they come; to give full attention to alternative possibilities; to recognize the possibility of error even in the beliefs that are dearest to us." (p. 30)

Open-mindedness is a key element in examining the taken-for-granted in schools and requires teachers who are willing to, "examine the rationales that underlie what they may initially take for granted as right and natural in the schools" and those who are "willing to question their own views of and reactions to the school culture" (Goodman, 1984, p. 20).

Dewey also writes that teachers must also possess an attitude of intellectual responsibility. That is, teachers must consider the consequences of their beliefs and
actions. Therefore teachers ought to question their practice in light of anticipated and unanticipated outcomes.

Lastly, Dewey (1933) described the attitude of wholeheartedness that is essential for reflective thought:

"When a person is absorbed, the subject carries him on. ... the material holds and buoys his mind upon and gives an onward impetus to thinking." (p. 32)

Wholeheartedness is not common in student teachers. Rather preservice teachers tend to focus on their performance in relation to pleasing their supervisors (Zeichner & Teitelbaum, 1982). Yet this attitude of engagement is seen to be crucial to developing a reflective teachers (Zeichner & Teitelbaum).

Reflective Practice in Teacher Education

Reflection is a construct, like intelligence, with a variety of meanings implicitly conceived by individuals yet often not explicitly articulated. The variety of meanings or "images of reflection" (Freiberg & Waxman, 1988) confirm the amorphous nature of reflective teacher education. These meanings range from conceptions of teachers as applied scientists (Brophy & Evertson, 1976) to teachers as moral craftsmen (Tom, 1984), two essentially polar views. Tom (1985) notes that the use of a similar term to describe a reflective approach does not guarantee an equivalent conception of reflection. He observes that Watson and Ellner (in Tom, 1985) both use the term scholar teacher in describing their reflective approaches. However Watson places emphasis on scholarship of subject matter while Ellner focuses on developing
sophistication in the teaching process. A compilation by Tom (1985) of reflective
designations is found in Table 2 below.
## Table 2

**Designations of Inquiry-Oriented Approaches to Teacher Education**

<table>
<thead>
<tr>
<th>Author</th>
<th>Term Used to Designate Approach</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freeman</td>
<td>Teachers as applied scientists</td>
<td>1930</td>
</tr>
<tr>
<td>Stratemeyer</td>
<td>Teachers as continuous experimenters</td>
<td>1949</td>
</tr>
<tr>
<td>Corey</td>
<td>Teachers as action researchers</td>
<td>1953</td>
</tr>
<tr>
<td>Shumsky</td>
<td>Teachers as action researchers</td>
<td>1958</td>
</tr>
<tr>
<td>Coladarci</td>
<td>Teachers as hypothesis makers</td>
<td>1959</td>
</tr>
<tr>
<td>Joyce/Harootunian O'Day</td>
<td>Teachers as problem solvers</td>
<td>1964</td>
</tr>
<tr>
<td>Hunt</td>
<td>Self-analytical teachers</td>
<td>1974</td>
</tr>
<tr>
<td>Brophy/Evertson</td>
<td>Adaptive teachers</td>
<td>1976</td>
</tr>
<tr>
<td>Kohl</td>
<td>Teachers as applied scientists</td>
<td>1976</td>
</tr>
<tr>
<td>Elliott</td>
<td>Teachers as political craftsmen</td>
<td>1976</td>
</tr>
<tr>
<td>Ellner</td>
<td>Self-monitoring teachers</td>
<td>1976-77</td>
</tr>
<tr>
<td>Schaefer</td>
<td>Teachers as scholar-teachers</td>
<td>1977</td>
</tr>
<tr>
<td>Walton</td>
<td>Teachers as scholar-teachers</td>
<td>1967</td>
</tr>
<tr>
<td>Wright</td>
<td>Teachers as scholar-teachers</td>
<td>1960</td>
</tr>
<tr>
<td>Cruickshank/Applegate</td>
<td>Teachers as problem solvers</td>
<td>1978</td>
</tr>
<tr>
<td>Zeichner</td>
<td>Reflective teachers</td>
<td>1981</td>
</tr>
<tr>
<td>Giroux</td>
<td>Reflective teachers</td>
<td>1981-82</td>
</tr>
<tr>
<td>Tom</td>
<td>Teachers as radical pedagogues</td>
<td>1983</td>
</tr>
<tr>
<td>Smyth</td>
<td>Teachers as moral craftsmen</td>
<td>1984</td>
</tr>
</tbody>
</table>

Note: The above individuals were cited in Tom (1985).
Reflective Strategies and Programs in Teacher Education

Given the variety of ways that educators use to characterize inquiry-based programs, it is not surprising to find a range of approaches to reflective teaching in the literature on teacher preparation. Examples of different strategies to promote reflection and programmatic approaches are described below in an effort to define the scope of reflective practice in teacher education.

Instructional Strategies to Promote Reflection

Teacher educators have conceived a variety of instructional strategies designed to develop reflectivity in preservice students. These include observations using ethnographic methods, action research, journals and writing assignments, student teaching seminars, and clinical supervision. These strategies will be reviewed using examples of their implementation in teacher education programs.

Observations and Ethnography. Zeichner (1987) describes the use of ethnography whereby preservice students examine educational contexts through observations and interviews. By these means preservice students are able to investigate a wide range of educational phenomena including teacher and student behavior, curriculum and socio-cultural aspects of schools.

Although ethnographic study in schools shows strong promise in helping preservice students understand the culture and dynamics of schools, little empirical support exists for this strategy.

Action Research. Action research has been conceived as a means to involve preservice students in inquiry. Zeichner and Liston (1987) report the use of action research in the context of student teaching in which student teachers participate in
research teams to study some aspect of their student teaching experience (e.g. grouping strategies).

Action research has been proposed as a means of professional development within Holmes style professional development schools (Holmes, 1986). The only research into this strategy consists of descriptions of programs without evaluative or empirical support.

**Journals and Writing.** Although Journals have been commonly used in preservice programs for many years, recently specific techniques have been developed to provide guidance concerning the use of journals in promoting professional development in preservice teachers (Zeichner, 1987). Yinger and Clark (1981) describe their use of the journal to induce an individual toward contemplation and to focus upon the values and knowledge with which one approaches teaching. They assert that journal writing allows preservice teachers to learn at least four important things about themselves: "what they know; what they feel; what they do; and why they do it" (Yinger & Clark).

At the University of Northern Iowa, Canning and her associates use a number of unstructured writing assignments to encourage reflective thought and help student teachers develop what Canning calls their "voice" (Canning, 1991). Students address ideas or issues that are important to them and are given the guidance of reflective principles to stimulate their thought. Students' initial negative response to the lack of structure gives way to their appreciation for the depth of thought such latitude allows (Canning).
Concerning research support for journals and writing, Zeichner (1987) notes that "we don't as yet have clear empirical validation of the many claims made regarding the educative value of writing for prospective teachers" (p. 570).

**Student Teaching Seminars:** Seminars tied to student teaching or fieldwork afford the preservice student an opportunity to dialogue with other students about their experiences in the K-12 classroom. In this environment, students can explore the issues and problems encountered in their fieldwork (Goodman, 1984). Zeichner (1980) establishes several essential elements for an educationally beneficial seminar: (1) helping students to critically examine issues and problems; (2) helping students see beyond conventional wisdom; (3) helping students develop a sense of the history of their classrooms and examine the rationale underlying classroom and school practice; (4) helping students examine personal assumptions and biases in terms of their effect on classroom practice; and (5) helping students examine the process of their socialization as teachers.

In terms of their effect on reflection, seminars have been promoted for their potential to develop reflective teaching (Armaline & Hoover, 1989; Liggett, Fulweiler, Clark, & Hood, 1988). However seminars have been found to encourage mastery of technique and classroom management over theory and reflectivity (Lanier & Little, 1986). Furthermore Zeichner and Tabachnick (1982) found that seminars tend to focus on concrete teaching incidents, and Tabachnick et al. (1979) revealed that seminars are not issue oriented but rather they found them to be "eclectic collections of responses to immediate classroom demands" (p. 21).

In a study conducted by Wedman, Martin and Mahlios (1990), these researchers conducted a seminars with a control group and experimental group. The
control group participated in seven seminars on teaching skills, while the experimental group attended a series of seminars on reflective teaching topics. They found that it is possible for preservice teachers to grow in reflective thinking practices when supported by programs designed to foster reflectivity. However, the other finding in this study was that both group's reflective teaching practices were primarily technical. The authors concluded that students need to be prepared for reflective teaching and that, quite possibly, not enough time exists during the initial phases of classroom teaching to engender the kind of reflection valued by these authors.

Seminars have the potential to live up to their promise of offering preservice students an opportunity to draw apart from their teaching circumstance and reflect on broad educational issues. However current practice seems to reflect a focus on a narrow range of concerns, principally those of management and techniques that are of immediate concern to the preservice student.

Clinical Supervisory Strategies: Clinical supervision is designed to analyze teaching behavior in an interactive exchange between student teachers and their supervisors. Within the preconference - postconference cycle, students are encouraged to reflect on their teaching and appraise their own teaching.

At the University of Houston researchers are using audio recordings of student teaching sessions and LISAM or Low Inference Self-Assessment Measure (Freiberg & Waxman, 1988). LISAM measures six areas of teacher/student interaction to help students systematically analyze and reflect on the relationship between this interaction and effective teaching.

Washington University-St. Louis incorporates a number of strategies within a structured, developmental program. Assuming that student teachers can learn as
well as apply theory in the field and that student teachers pass through developmental stages, Cohn and Gellman (1988) use developmentally appropriate strategies in various stages of student teaching. The first phase of three weeks focuses on self-inquiry (called ego-counseling) and on adjustment and survival needs (termed first aid supervision). The second phase, of nine weeks, centers on the student’s task of learning to become a teacher. In this phase, the supervisor asks probing questions to promote connections between theory and practice. The final four weeks of student teaching is concerned with clinical supervision. This phase is student directed in which the student teacher sets the agenda for conferences and leads the discussion. The goal is to help the student develop the conviction that teaching is subject to intellectual analysis. Throughout the field experience, peer group reflection is used to promote growth and reflective thought within the student teacher cohort.

While some evidence exists to suggest that clinical supervision promotes reflection in discussing a preservice student's teaching (Zeichner & Liston, 1985), it is difficult to generalize about the effect of clinical supervision on reflective teaching practice.

**Research Related to Reflection in Teacher Education**

Tabachnick and Zeichner (1985) found that student teachers, involved in an inquiry-based student teaching program, maintained the same perspective at the end of student teaching that they had held when they entered their student teaching experience. Therefore if students entered the program with a technical outlook on teaching, they left student teaching with they same perspective, albeit a more sophisticated and well-articulated version of their basic view of teaching.
In a 1985 study, Zeichner and Liston investigated the congruence between the expressed goals of an inquiry-based program and the discourse that took place between university supervisors and student teachers in post-observation conferences. The investigators distinguished between four types of discourse: factual, prudential, justificatory, and critical. Each of the four categories also contained several subcategories that further discriminated between types of discourse within those major categories. In their scheme, factual and prudential discourse were considered non-reflective since they did not express analysis or problem-solving and involved no rationale or justification for suggestions and alternatives proposed. In their study, Zeichner and Liston found that 19.6 percent of the discourse between student teachers and university supervisors represented reflective forms of communication. In addition, the authors found that this discourse was influenced by the conceptual level of the student, and therefore the student teachers had a "pulling effect" on the level of discourse in these supervisory conferences.

Korthagen and Wubbels (1991) reported their research efforts on reflectivity in teachers. The studies centered in the secondary mathematics education department of a teacher education college (SOL in Utrecht in the Netherlands). Korthagen defined the view of education held by that mathematics department as process-oriented and held the following views:

- Good education is learning-oriented: it focuses on the learning process of the student; the teacher is the facilitator of that process.
• One of the main tasks of the teachers is to present real and concrete problems which the student then approaches by means of analysis, structuring and the testing of alternative solutions.

• Education should devote considerable attention to problem-solving, collaborative learning, metacognitive strategies and learning how to learn.

• The ultimate goal of good teaching is the promotion of conscious and strategic learning and problem-solving.

• The relationship between the teacher and the student is a helping and cooperative relationship in which the teacher offers a climate of security and challenge, and only as much structure as each individual student needs.

• The process towards more independent learning by the student requires a strategy of gradualness in which the student is given more and more responsibility for the learning process.

• Teachers should be capable of committing themselves purposefully, consciously, and methodically as an instrument in the teaching learning situation.

• Teacher should themselves be able to deal with mathematics in a conscious and systematic manner

• Teachers should be able to analyze and develop their interpersonal relationships with the student, with a view to attaining the ideal helping and cooperative relationship.
• Teachers should be conscious of their own strong and weak points, and direct their own development in the direction of the nine principles formulated above.

This view of teaching was tied to a model of reflection, ALACT (Korthagen & Wubbels, 1991), represented by the following process:

1. Action: confrontation with a concrete situation which requires action
2. Looking at or looking back on the situation (analysis)
3. Awareness of essential aspects
4. Creation of alternative solutions or methods of action
5. Trial

Korthagen and Wubbels point to the third step as the pivotal process of reflection and define reflection as "the mental process of structuring or restructuring an experience, a problem or existing knowledge or insights" (Korthagen & Wubbels, 1990).

These researchers reference four studies that were conducted to test the efficacy of this model:

1. a survey of the mathematics education graduates: This study indicated that students were discriminable in terms of locus of practice; some students were externally oriented practitioners while the others were internally oriented practitioners. Based on the program's definition of reflective practice, these students were termed reflective practitioners.
2. a longitudinal study which traced the reflective nature of 18 preservice students (Korthagen & Verkuyl, 1987): this investigation further revealed
the differences between internally and externally oriented students. While the internally oriented students expressed satisfaction with the program, the externally oriented students did not value the program and most of these students left the program after 18 months.

3. the construction of an instrument to measure the internal/external orientation of prospective students (Korthagen, 1988).

4. a comparative study in which the graduates of SOL were compared with graduates of another program which was characterized by its subject-matter orientation (Wubbels & Korthagen, 1990): Graduates of the SOL program (n = 37) and the comparison program (n = 36) had been in teaching between one and ten years.

On the basis of these studies, Korthagen and Wubbels (1991) developed a number of correlates to reflectivity. These are:

1. Reflective teachers have better interpersonal relationships with students than other teachers.
2. Reflective teachers develop a high degree of job satisfaction.
3. Reflective teachers also consider it important for their students to learn by investigating and structuring things themselves.
4. Reflective student teachers have previously been encouraged to structure their experiences, problems, etc.
5. Reflective student teachers have strong feelings of personal security and self-efficacy.
6. Student teachers with teaching experience, who have a high degree of self-efficacy, focus on students in their reflection. When they have a low sense of self-efficacy, they focus on self.

7. Reflective student teachers appear to talk or write relatively easily about their experiences.

8. Female student teachers reflect more on their relationships with fellow students and less on subject matter (mathematics) than men.

One of the very significant findings of this study was the conclusion formed by Korthagen and Wubbels (1991) that preservice teachers can develop reflective behavior in their concern for others. This behavior is not usually developed until later in a teacher's inservice professional development (Fuller & Brown, 1975).
Reflective Teaching

Developed at The Ohio State University, Reflective Teaching is a laboratory-based regimen designed to provide preservice teachers:

an opportunity to practice teaching, to determine its success, and to generate knowledge about teaching and learning that should result in improved future classroom performance. Reflective teaching was conceived to combine the elements of microteaching, simulations and peer teaching to involve preservice teachers in the complete act of teaching to cause them to reflect thoughtfully about their observations of instruction (Cruickshank, 1985, p. 96).

Cruickshank has also written:

In essence, Reflective Teaching is an effort to increase teacher wisdom by engaging preservice students in controlled, on-campus teaching where their behavior is observable and measurable and where their teaching can be examined and thought about in ways that will enhance subsequent performance. (p. 97)

Reflective Teaching finds theoretical support in Dewey's (1933) writing on reflective practice. Dewey maintained that students need to be involved in authentic experiences and that reflection grows out of perceived problems. In reflective teaching, preservice teachers engage in planning, implementing and assessing instruction. To the extent that Reflective Teaching is authentic, it has the potential to develop in participants good habits of thinking, through problem solving and reflection.
professional preparation. Schon conceives of virtual worlds as a models of reality or a "constructed representations of the world of practice" (p. 157).

The laboratory creates a safe atmosphere, conducive to experimentation, in which experiences can be planned and where students can implement and re-implement interesting aspects of teaching that might otherwise be irreversible in a field-based setting (Schön, 1983).

The laboratory setting of Reflective Teaching is supported by research in the development of preservice teacher reflectivity. Research has demonstrated the effects of field experiences in transmitting conventional practices and which inhibit the growth of innovative and reflective practice (Zeichner & Tabachnick, 1984). Reflective Teaching provides a venue in which students can learn to be innovative and reflective without the conflict of the authority issues found in schools. Further, research suggests that students need to be prepared for reflection prior to student teaching experiences (Korthagen, 1985; Wedman & Martin, 1991) or before field experiences in general (Wedman, Martin & Mahlios, 1990).

Therefore Reflective Teaching has the potential to equip students, before they enter their field experiences, to approach teaching with a habit of critical reflection rather than an attitude of unconsidered acceptance of school routines.

The Process of Reflective Teaching

Reflective Teaching involves a group of preservice students in small group peer instruction. Typically, a class of students is divided into groups of four to six individuals. One member of the group is selected as the "designated teacher." The designated teachers are given a common Reflective Teaching Lesson which they use to plan their presentation. The Reflective Teaching Lessons provide students
with a description of the teaching task, lesson objectives, background information, and evaluation instruments. Within this structure the designated teachers are free to plan their teaching session in any way they choose in order to promote learner satisfaction and achievement.

The Reflective Teaching sessions are conducted in the following manner: When the college instructor notes that the groups are set up and ready, all designated teachers are asked to begin. Using their individual plans, the designated teachers are given 15 minutes to teach. After they are signaled to stop, the learners are given a test and are asked to complete a learner satisfaction form. Following this evaluation and using the input from the learners' achievement and satisfaction, the designated teachers lead their group in a 15 minute small-group reflection. Following these small-group discussions, the college instructor reconvenes the whole class for further examination and comparisons of the teaching-learning process. The small and large group discussions are the heart of the reflective process and allow the college instructor an opportunity to guide preservice students in the act of reflection.

Reflective Teaching Lessons

The Reflective Teaching Lessons (RTLs) are an important element of Reflective Teaching. There are thirty-six RTLs that were developed at The Ohio State University (Cruickshank, Holton, Fay, Williams, Kennedy, Myers & Hough, 1981). According to Cruickshank (1985) each of these meets five criteria:

1. The lesson must be interesting to teach and learn.
2. The content must be different from the usual academic curriculum.
3. The lesson must be brief enough to be successfully taught in 15 minutes or less.

4. The outcomes must be directly observable and measurable.

5. The lesson must be self-contained and must include all materials for instruction. (p. 97)

Reflective Teaching Lessons have been written with primary objectives from the psychomotor, affective and cognitive domains. The content of RTLs is, by design, novel to preservice students in order to create an authentic learning task.

Response to Reflective Teaching

The response to reflective teaching has been highly favorable as evidenced by its use and acceptance by teacher educators (Cruickshank, 1985). However several writers have offered critiques of Reflective Teaching.

Reflective Teaching was criticized by Gore (1987) for its "content-free" lesson format. She recommends allowing students to choose their own content including an examination of students preconceptions and biases in the reflection which follows the lessons. Actually there is nothing inherent to Reflective Teaching to prevent the implementation of Gore's suggestions, and in fact, such choices are possible within the original design of Reflective Teaching (Cruickshank, 1980).

Concerning the mechanism of Reflective Teaching, Beeler et al. (1985) developed a learner satisfaction form which asks learners to make more precise determinations with regard to their level of satisfaction. The authors believe their ten point scale from a satisfaction level of "exceptional" to "dissatisfied" requires learners to make more accurate determinations.
Several other suggestions for the improvement of Reflective Teaching were offered by McKee (1986). These recommendations included videotaping lessons to allow the designated teacher an opportunity to review the lesson, a Peer Teaching Appraisal Guide for learners to rate the designated teacher, a Teaching Observation Schedule for the designated teacher to reflect on the lesson, and a summary of the generalizations made during each Reflective Teaching session. (p. 3)

**Research on Reflective Teaching**

The most extensive study was conducted by Cruickshank et al. (1981) to determine if: (1) students who participated in Reflective Teaching were able to identify a greater number and variety of variables in teaching; (2) students who participated in Reflective Teaching were better able to critically discuss teaching and learning events; (3) students who participated in Reflective Teaching had more positive affects toward their undergraduate preparation and a more realistic and positive view of future engagement in teaching; and (4) students who participated in Reflective Teaching would report behavioral changes similar to former participants.

Findings from this study (Cruickshank et al., 1981) indicated that student who had participated in Reflective Teaching were able to produce more analytic statements about teaching and learning. In addition these researchers found that participants were "less anxious," "less frightened," and "more confident" about the prospect of beginning student teaching.

McKee (1986) studied preservice students using Reflective Teaching and found a high level of satisfaction in these participants. Additionally he found that
Reflective Teaching is an effective means of helping preservice students develop skill in lesson planning.

In addition to the recommendation by Beeler et al. (1985) noted above, this group of researchers found evidence for maintaining groups of five to eight members and rotating the composition of groups from one lesson to the next. Furthermore, based on their research, they recommend selecting highly enthusiastic individuals as the first designated teachers and choosing Reflective Teaching lessons with high interest in the initial sessions.

Troyer (1988) investigated the effect that participation in Reflective Teaching has upon participants' level of reflection and ability to analyze classroom teaching. She established three groups: students who participated in Reflective Teaching, students who participated in Augmented Reflective Teaching (Reflective Teaching with additional theoretical instruction of Reflection), and a control group. She found that students engaged in Augmented Reflective Teaching and Reflective Teaching had a significantly higher level of reflection than students not trained in Reflective Teaching. Her work indicates that preservice students can be taught to reflect and develop abilities to critically analyze teaching.

Bainer and Cantrell (1992) conducted two investigations related to Reflective Teaching. In their first study, Bainer and Cantrell analyzed the content of 88 reflective essays which were written by designated teachers following their Reflective Teaching lessons. Nine dominant themes emerged in the written expressions of reflection supplied by participants in which preservice teacher's thoughts about their teaching focused on a variety of variables, most notably on the process of teaching with special attention given to instructional planning and implementation.
In their other study, Bainer and Cantrell (1993) investigated the relationship between the instructional domain of Reflective Teaching lessons and the content of reflection in preservice teachers. In their study, these researchers reanalyzed the data from their 1992 study in which subjects had been assigned to teach one of four Reflective Teaching lessons, each in different instructional domains: (1) lower order cognitive domain (knowledge/comprehension); (2) higher order cognitive domain (analysis/synthesis); (3) affective domain; and (4) psychomotor domain. The reflective essays were analyzed to determine if there were differences in amount and content of reflection between groups exposed to RTLs in different instructional domains. Bainer and Cantrell found that the RTLs were equally successful in promoting reflection. However differences did surface in an analysis of the content of reflection. Students reflected more on the effectiveness of methods in the cognitive tasks and more frequently noted the need for flexibility after teaching a higher level cognitive task. Further, students reflected about personal values more after teaching in the affective domain. Other differences noted concerned issues of time, teaching style, planning and expectations for learners. Therefore although the type of reflective teaching task does not appear to affect the amount of reflection, the findings of this study indicate that different Reflective Teaching tasks influence the issues addressed in reflection. Finally a significant finding in this study was that preservice students' reflection was not limited to technical aspects of teaching, but students also reflected about psychological, social and ethical issues and the related consequences of their teaching.

Finally, a recent study by Metcalf (1994) demonstrated that laboratory experiences such as Reflective Teaching are superior to extensive and extended
field-based experiences. Metcalf's study consisted of a metanalysis of 60 study reports which provided 83 pairwise comparisons of laboratory experiences and field-based experiences. In this study, Metcalf examined the effect of laboratory and field studies based on the type of subject (preservice or inservice), learner type (i.e. peer or school-aged children), the context, and time from treatment to measurement. The results indicated that laboratory experiences are valued by preservice and inservice teachers, are highly effective in the preparation of teachers, do not promote many of the negative residual effects of field-based studies, are at least as effective with inservice teachers as with preservice students, is enhanced when natural learners are used, are enhanced when integrated in a broader pattern of instruction and are more effective when diverse experiences are implemented in concert. This study demonstrates the import and potential of laboratory-based instruction.

Summary

Several conclusions can be drawn from this review of the literature on reflective teaching. First, a reflective approach to teaching has overwhelming support in the teacher education community. As such, a viable conceptual framework of reflective practice should be developed. Richardson's (1990) suggestions regarding the necessary criteria for the general acceptance of a reflective approach in teacher education is a starting point. However any theory of reflection will ultimately need to find acceptance in rigorous research to confirm its fruitfulness in professional practice.

There is at least some evidence that indicates preservice teachers can be taught to be more reflective (Korthagen & Wubbels, 1991; Zeichner & Liston, 1987;
Troyer, 1988). However, the findings of several researchers (Wedman, Martin & Mahlios, 1991; Korthagen 1986; Zeichner & Liston, 1987) indicate that reflective habits may need to be formed before students are engaged in field studies due to the demands of these experiences and the traditional attitude fostered in schools. These findings suggest the increased development and refinement of campus and laboratory-based strategies to promote reflection.

Therefore, given the manner in which reflective practice is valued, a rigorous program of research is needed to establish the viability of reflective programs and instructional strategies. As Bainer and Cantrell (1993) have observed, "If reflection is dependent on the experience provided, it is important to establish the impact of different experiences on reflection" (p. 2). Such research is needed to establish theoretical models, evaluate the effectiveness of programs conceived to engender reflective habits, and confirm the efficacy of various instructional strategies designed to promote reflection in teachers. Finally, the literature provides a caution against overprogramming reflective teacher preparation into a prepackaged set of experiences.
CHAPTER III
RESEARCH PROCEDURES

The intent of this study was to examine the nature of discourse that takes place during Reflective Teaching within the small group discussions. This chapter provides a description of the research procedures employed to answer the research questions articulated in chapter one. The research procedures are described under four major headings: (1) subject selection; (2) research design; (3) instrumentation; and (4) data analysis.

Subject Selection

The accessible population for this study was comprised of preservice teacher education students at The Ohio State University. In general, these students were working toward a baccalaureate degree in education and consequently Ohio Teacher Certification. Nearly all such students are required to complete a two course sequence entitled the Professional Introduction to Education (450 and 451). Students in this program are typically either juniors or seniors. Due to a restructuring of the College of Education, only secondary education students were enrolled in ED 450 during the quarter this study was conducted.

The Professional Introduction sequence offers a course of study in general methods. The first course in this sequence, ED T&P 450, focuses on the learner incorporating an introduction to human development, learning theory, and other
issues in educational psychology. The second course, ED T&P 451, focuses on pedagogy including a cognitive approach to instruction, principles of effective teaching, planning, classroom management, and evaluation of instruction.

In both of these courses, students are engaged in Reflective Teaching as part of the curriculum. In the first course, students teach two Reflective Teaching Lessons (RTLs) as the designated teacher. In the second course, students teach one Reflective Teaching lesson.

The sample for this investigation consisted of 36 students enrolled in ED T&P 450 during the Winter Quarter of 1995. Although all 45 of the students in ED T&P 450 participated in the study either as designated teachers or learners, 20 students were randomly selected from each section of ED T&P 450 to serve as designated teachers during videotaping. Additionally students were randomly assigned within each classroom for participation as learners in the Reflective Teaching lessons. The remaining five students' (two from one section of ED 450 and three from the other) RTLs were used for rater training. The final number of RTLs used in this study was reduced to 36 due to the poor quality of videotapes or missing data from the students.

Because the accessible population of this study may not be representative of some larger population of preservice teachers, a description of the student population is provided to allow the reader to apply the findings of this study to other contexts. Of the 45 participants, 24 were male and 21 were female. All of the subjects were secondary education majors. With regard to their major in education, 25 were Social Studies Education, 10 were English Education, 6 were Business Education, 2 were English as a Second Language, 1 was German Education, and 1
was in Nursing Education. Seven of the students were in working toward a master's degree or were post-degree students and the remainder were undergraduates in their junior or senior year of study. Undergraduate students had taken an average of two course in education prior to ED 450 which included their Freshman early education experience. The graduate or post-degree student on average had taken 5 education courses prior to ED 450. Finally, approximately 20% of the students were non-traditional (over 24 years of age).

Research Design

This study was exploratory and descriptive in nature and designed to examine the nature of discourse that takes place during Reflective Teaching within the small group reflective discussions.

Data Collection

The two Education 450 classes being studied met on Monday, Tuesday, and Wednesday for three hours. All data was collected during regularly scheduled class sessions as subjects in ED T&P 450 were videotaped as they participated in Reflective Teaching. The content of the lessons included those with primary objectives in the psychomotor and cognitive domains. During the data was collection, students participated once as a designated teacher and four times as a learner.

Reflective Teaching Lessons:

Reflective Teaching lessons were selected primarily for their potential to stimulate discussion and reflection. A secondary criteria focused on the potential of the RTL to
produce test results that discriminated between learners. The following procedures were used to select the RTLs used in the study.

First, studies by Williams and Hough (1980) and Troyer (1988) were used to develop a list of Reflective Teaching lessons which these researchers had found to have potential in promoting reflective thought. Second, graduate teaching associates, with extensive experience in the process of Reflective Teaching, were asked for recommendations of lessons which had proven effective in generating reflection and discussion during Reflective Teaching. Third these same teaching associates were asked to recommend lessons which tend to discriminate between learners on the associated test measures. From these recommendations, a total of five lessons were selected for use in this investigation. These were (also see Appendix B):

1. The Origami - Learners are taught to construct a butterfly from a square sheet of paper using the art of Japanese Origami. This is a psychomotor/higher order cognitive task wherein learners must recall and apply the steps in folding the butterfly and also be able to manipulate the paper.

2. The Magic Square - Learners are taught to design a magic square for any odd dimensions (e.g. 3x3, 5x5) in which all rows columns and diagonals sum to the same number. This is a higher order cognitive task (application/analysis).
3. The Vocabulary - In this lesson, the designated teacher leads the learners in memorizing and recalling the synonyms for ten vocabulary terms. This is a lower order cognitive task (memory/recall).

4. The Multiplication - Learners are taught to multiply to matrices together and render the product. This task involves the application of a complex algebraic process.

5. The Discipline in the Elementary School - Learners are led to recall and eight characteristics of an effective teacher (qualities relating to student behavior). This is a lower order cognitive task.

The instructions to designated teachers in Reflective Teaching lessons included a description of the teaching task and its objectives, a list of materials, a list of any special conditions or limitations imposed on the instructor, lesson content, and directions for assessing learner achievement. Lesson were randomly assigned to designated teachers and packets with the materials listed above were assembled for each designated teacher (including all students in ED T&P 450). One week prior to the first Reflective Teaching session, lessons were distributed to the students according to the schedule found in Table 3. Each section of ED T&P 450 viewed a videotape entitled, *Reflective Teaching*, produced at The Ohio State University. Also during this class session, the course instructor provided the following information:

1. Students were instructed to analyze the task and objectives of their lesson and were encouraged to use teaching methods that they believed would best allow them to realize the lesson’s objectives.
2. Students were reminded that they would have a maximum of ten minutes to present the lesson.

3. The learner's role was described.

4. The process and purpose of small group reflection was described.

Videotaping Procedures:

The Reflective Teaching session was conducted the following week on Monday. The procedure for each lesson is as follows:

1. Each designated teacher was randomly assigned three to five "learners" to whom they presented their lessons. Designated teachers were allotted fifteen minutes for instruction.

2. Following the instructional period, the designated teachers assessed their learners' achievement and administered learner satisfaction rating forms (see Appendix C).

3. Designated teachers led their small groups in discussion, for approximately ten minutes, to reflect on the objectives, methods, and outcomes of the previous lesson. Each teacher was given a list of small group reflective questions with their Reflective Teaching materials to guide their discussion (Cruickshank et al., 1980) (see Appendix D). These questions, suggested by Cruickshank, are modified and rendered so as to allow for the possibility of discussion at all levels of discourse defined in
this study (see Appendix D). It should be noted that the choice of
questions was left open to the designated teacher.

4. Following the small group discussions, the entire class met as a whole to
compare and contrast the approaches used by the various designated
teachers. Large group questions were used by each instructor to facilitate
an examination of planning, presentation, outcomes, pedagogical issues,
learner satisfaction and the teacher's role.

Each small group was videotaped, throughout the Reflective Teaching
lesson, including the time devoted to assessment, completion of learner satisfaction
forms, and small group discussions.

Upon completing this session of Reflective Teaching, students in both
sections of ED 450 had:

1. taught one Reflective Teaching lesson;
2. assessed their learners achievement and satisfaction;
3. led a small-group discussion;
4. participated as a learner in four Reflective lessons, four small group
discussions, and rated four designated teachers; and
5. participated in five large group discussions.

Directions to Course Instructors

The investigator met with the two instructors assigned to ED 450 prior to the
Winter quarter to insure their agreement on the goals of Reflective Teaching and its
implementation. During these meetings, the researcher presented an outline of procedures and highlighted several key concerns:

1. The rationale for Reflective Teaching should be presented to the students.

2. In addition to reviewing the process of Reflective Teaching, learner satisfaction forms were reviewed and soliciting honest appraisals of the designated teacher's performance was emphasized.

3. The importance of the small group reflective discussions was emphasized.

Both of the instructors were given a packet of materials for use in their Reflective Teaching sessions including Reflective Teaching lessons, learner satisfaction forms, learner achievement tests, small group discussion questions, and large group discussion questions. The directions presented to the instructors are reproduced in Appendix E.

**Instrumentation**

Since this study focused on observing subjects' reflection, a valid and reliable means of describing reflection was required. The principal observation instrument employed was based upon Zeichner and Liston's (1985) Reflective Teaching Index as modified by Troyer (1988).

The Reflective Teaching Index was developed by Zeichner and Liston (1985) to assess the thoughts expressed by student teachers during conferences with their
supervisors. The Reflective Teaching Index employed content analysis to scrutinize thought units expressed during supervision conferences. Thoughts expressed were assigned to one of four categories: factual discourse, prudential discourse, justificatory discourse, and critical discourse. Each of these categories was divided into several subcategories for further definition. Once the student teacher’s thoughts were placed in one of the categories, a percentage of thought units in each category was calculated, and a profile of reflective thought could be established. It should be noted that in examining discourse using the Reflective Teaching Index, some categories are considered to characterize reflective thought and others do not. Specifically, Factual (with the exception of explanatory/hypothetical) and Prudential discourse are considered non-reflective. Factual discourse is considered non-reflective since it is essentially information that is being supplied by participants. Prudential discourse is also considered non-reflective since it involves advice that is offered by participants without providing a reason or rationale for their suggestion. In contrast, reflective discourse, Explanatory, Justificatory, and Critical represents analytical thought and probes the reasons behind problems and proposed alternatives. Distinctions are drawn, in the following discussion, between categories considered to represent reflective or non-reflective thought.

Validity of Instrumentation

To establish the Reflective Teaching Index as a valid means of observing reflection in Reflective Teaching lessons, the categories and subcategories of the Reflective Teaching Index were compared to the stated goals of Reflective Teaching in a manner similar to Troyer (1988). Following is a description of the major
categories and their subcategories according to the scheme developed by Zeichner and Liston (1985):

**Factual Discourse** expresses attempts to describe, identify, interpret and explain educational phenomena. There are four types of factual discourse with only explanatory/hypothetical discourse considered to be reflective. These four types are:

1. **Descriptive discourse** recounts the details or characteristics of observed phenomena.

2. **Informational discourse** identifies information relevant to the observation but not verifiable by direct observation of the lesson being analyzed.

3. **Hermeneutic discourse** explores the meanings which underlie the words or actions of participants in educational settings.

4. **Explanatory/hypothetical discourse** identifies the cause-and-effect relationships the occur in educational settings.

**Prudential Discourse** is characterized by suggestions or advice proffered regarding instruction and/or intended to judge the value, worth or quality of a teacher's actions. Based on the approach of Zeichner and Liston, (1985) one of the four categories which follow are considered to represent reflective thought.

1. **Instruction** is a suggestion that a teacher try a particular procedure or approach without providing rationale or justification for the method.
2. **Advice/opinion** is a suggestion that a teacher consider two or more courses of action without providing rationale or justification for the suggested actions.

3. **Evaluation** is a positive or negative judgment about the value, worth or quality of an action without supporting justification.

4. **Support** is characterized by an expression of empathy of emotive encouragement for a past, present, or future action.

**Justificatory Discourse** is characterized by the expression of reasons or rationale for past, present, and future actions. This type of discourse asks, "on what basis do I justify a particular action or decision?" There are three types of justificatory discourse distinguished by the type of rationale offered to justify observed actions. Each type of justificatory discourse is considered indicative of reflective thought.

1. A **pragmatic rationale** is offered to justify a pedagogical action based on its effectiveness or efficiency to effect an outcome.

2. An **intrinsic rationale** is offered to justify a pedagogical action based on beliefs about universal knowledge, values or student needs.

3. An **extrinsic rationale** is offered to justify a pedagogical action based on criteria external to the present context (e.g., potential value to society).

**Critical Discourse** assesses the adequacy of the reasons advanced in justificatory discourse. It also assesses the intrinsic values within the
structure and content of curriculum materials and instructional practices. Therefore critical discourse also examines what is known as the "hidden curriculum." The four types of critical discourse correspond to the categories of justificatory discourse, pragmatic, intrinsic, and extrinsic, along with curricular and instructional practice (i.e. hidden curriculum). Critical discourse is also considered as indicative of reflective thought.

By way of comparison, the goals and anticipated outcomes of Reflective Teaching are listed below.

Preservice teachers should:

1. produce generalizations about teaching, learning, and learners (Cruickshank, 1987, in Troyer, 1988)

2. to generate knowledge about teaching and learning (Cruickshank, 1991, in Troyer, 1988)

3. be aware of the conscious and unconscious determinants of classroom behavior (Cruickshank, 1987, in Troyer, 1988)

4. see complex relationships among the teacher's characteristics and training, the learner's characteristics, the learning environment, the content to be taught, and teaching behaviors (Cruickshank, 1987, in Troyer, 1988)

5. ask basic questions about what is happening and why (Cruickshank, 1987, in Troyer, 1988)
6. identify variables associated with effective teaching performance (Cruickshank, 1984, in Troyer, 1988)

7. consider the intended and unintended effects of actions (Cruickshank, 1987, in Troyer, 1988)

8. ask "why am I doing what I'm doing?" (Cruickshank, 1991, in Troyer, 1988)

9. disregard unfounded commitments about schooling, learning, and teaching (Cruickshank, 1986b, in Troyer, 1988)


12. raise critical questions - (Cruickshank, 1987, in Troyer, 1988)


14. critically examine taken-for-granted ideas (Cruickshank, 1987, in Troyer, 1988)

If the Reflective Teaching Index categories are compared to the goals of Reflective Teaching, a close correspondence is observed. The type of thinking represented by the first five goals listed above is indicative of
Explanatory/hypothetical discourse which examines causal and comparative relationships in classroom phenomena. The next two goals, six and seven, are concerned with the effectiveness of instruction and with rationale that underlie teaching practices and thus are indicative of justificatory discourse. The last group of Reflective Teaching goals, eight through thirteen, are concerned with examining the inherent beliefs and values of educational practice. These goals are indicative of critical discourse.

Based on the previous comparative analysis, there appears to be a strong relationship between the goals of Reflective Teaching and the categories of discourse identified with reflectivity in the Reflective Teaching Index. In addition to documenting reflective discourse, the Reflective Teaching Index also records the incidence of non-reflective discourse. Capturing all discourse and being able to differentiate reflective from non-reflective discourse is a key objective of this study. Therefore the Reflective Teaching Index would appear to be a valid instrument to observe and assess the discourse which takes place during Reflective Teaching. Table 4 provides a comparison of Reflective Teaching Objectives to the RTI categories (based on similar analysis by Troyer (1988)).
Table 4.
A Comparison of Reflective Teaching Objectives
To Reflective Teaching Index Categories

<table>
<thead>
<tr>
<th>Desired Outcomes of Reflective Teaching</th>
<th>Reflective Teaching Discourse Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. produce generalizations about teaching, learning,</td>
<td>Explanatory Hypothetical Discourse</td>
</tr>
<tr>
<td>2. generate knowledge about teaching and learning</td>
<td></td>
</tr>
<tr>
<td>3. be aware of the conscious and unconscious determinants of classroom behavior</td>
<td></td>
</tr>
<tr>
<td>4. see complex relationships among the teacher's characteristics and training, the learner's characteristics, the learning environment, the content to be taught, and teaching behaviors</td>
<td></td>
</tr>
<tr>
<td>5. ask basic questions about what is happening and why</td>
<td></td>
</tr>
<tr>
<td>6. identify variables associated with effective teaching performance</td>
<td>Justificatory Discourse</td>
</tr>
<tr>
<td>7. consider the intended and unintended effects of actions</td>
<td></td>
</tr>
<tr>
<td>8. ask ... why am I doing what I'm doing?</td>
<td></td>
</tr>
<tr>
<td>9. disregard unfounded commitments about schooling, learning, and teaching</td>
<td>Critical Discourse</td>
</tr>
<tr>
<td>10. examine classroom life with an eye toward improving it</td>
<td></td>
</tr>
<tr>
<td>11. What are the consequences of my teaching? How can I improve?</td>
<td></td>
</tr>
<tr>
<td>12. raise critical questions</td>
<td></td>
</tr>
<tr>
<td>13. examine beliefs regarding teaching and learning</td>
<td></td>
</tr>
<tr>
<td>14. critically examine taken-for-granted ideas</td>
<td></td>
</tr>
</tbody>
</table>

Note: Adapted from Troyer (1988)
Two other instruments were designed to assess the instruction of each RTL I and the structure of the small group discourse. The basis of these instruments are detailed below. Measures of instructional clarity and small group questioning behavior were developed as a means to assess these characteristics of RT as variables relating to the quality of small group discourse.

The first instrument was developed in an attempt to discriminate between RTL on the basis of the clarity of instruction. This instrument was designed to assess the use of eight clarity skills using a five level Likert-scale rating. Each level of the Likert-scale incorporated an operational definition of the level to facilitate an accurate determination by raters. This instrument was modified from Metcalf's (1989) clarity skills training program. Metcalf's structure was developed from extensive research conducted at Ohio State University on Clarity (Hines, 1981; Hines, Kennedy, & Cruickshank; Larsen, 1985; and Williams, 1983). Assessment of these clarity skills have been shown to be highly reliable (Hines, Kennedy, & Cruickshank). Furthermore, research has demonstrated the validity of clarity behaviors in that they "bear a significant, positive relationship to student learning and satisfaction" (Metcalf & Cruickshank, 1991). Furthermore the eight clarity skills employed in the instrument used in this study were selected based on the criteria that preservice teachers might reasonably be expected to use some of these behaviors (without training).

The instrument was subjected to review by a panel of graduate students familiar with clarity skills. This panel was asked to examine the instrument to determine:

- if preservice teachers with no training could be expected to demonstrate the behaviors included in the instrument and
if the Likert-scale descriptors were unambiguous.

Based on the panel's recommendations, the instrument was refined to its final form (see Appendix F).

A second instrument was developed to discriminate between designated teachers on the basis of their questioning and leadership in small group discussions. A measure of the designated teacher's leadership of the small group discussion was established to explore the relationship of discussion leadership to the quality of reflection in small group reflection. This instrument involved a five factor assessment that focused on the designated teacher's preparation, directiveness, and questioning behavior in small group discussions. A similar procedure of panel review was employed in the development of this instrument. A copy of the rating form can be found in Appendix G.

Data Analysis Procedures

The videotaped sessions of small group discussion were each approximately ten minutes in length. These videotape records of group discourse served as transcripts for content analysis. The following describes procedures to analyze the content of these discussions.

Analysis of Discourse Using the Reflective Teaching Index (Questions 1, 2, 4, 5, 6)

In order to insure that the analysis captured each thought unit, transcripts of each small group reflective discussion were prepared. The procedure, suggested by Bales (1950) for dividing transcripts into thought units, involved an analysis of
sentences within the expressed thoughts of subjects. Sentences were analyzed to determine:

1. the thought or thoughts contained within each sentence. Some simple sentences expressed a single thought which could be assigned to one category of discourse while complex sentence might express two or more thoughts which were assigned to two or more categories of discourse.

2. the thought units which were expressed over two or more sentences.

Analysis consisted of assigning thought units to the categories of discourse found in the Reflective Teaching Index. Once a thought unit was assigned to a category of discourse, this assignment was recorded on the Reflective Teaching Index Rating Form (see Appendix H) in the order in which the thoughts were expressed. When each thought in the small group discussion had been assigned and recorded, the thought units were tallied to calculate the total number of thought units related to each subcategory of discourse. Consequently, ratios of different types of discourse could be determined from this analysis.

Rater Training Procedures:

Three individuals were trained in the analysis procedures previously described. Two of the raters were second-year doctoral students in teacher education at the Ohio State University and the other rater was a Ph.D. working in the College of Education. Each of the raters had experience with Reflective Teaching but were not directly involved in the courses being taught during the Winter quarter of 1995.
In the first training session, raters were given a brief overview of the study. Next the operational definitions for the categories of discourse found in the Reflective Teaching Index were presented and discussed. Questions relative to these definitions were then raised and addressed. Raters were then given sample thought units to place into the appropriate categories of discourse, and any uncertainty in assigning thought units was discussed.

The second training session provided raters the opportunity to rate a sample transcript. However prior to this practice rating, the categories of discourse were again reviewed and further clarified with examples which served to characterize each of the categories and the distinctions between them. Following this exercise, raters were given identical transcripts (already divided into thought units) to analyze. When all raters had completed their analysis, their ratings were tabulated and any disagreements between raters, in rating thought units, were discussed in order to help them agree on their rationale for assigning thought units to particular categories.

During the third training session, raters were asked to analyze the same transcript in order to establish a baseline interrater reliability. These independent ratings were analyzed using a percent agreement in the manner of Harris' (1986) technique for determining rater reliability. This analysis revealed an interrater reliability of 83% (percent agreement) based on the major levels of discourse and on the overall degree of reflection on the last two tapes. Since interrater reliability had reached an acceptable level of agreement, greater than 75% (Harris, 1986), raters were given their first set of 5 transcripts to rate.
Rating Procedures

Each transcript was coded to identify the small group and the Reflective Teaching session to insure accuracy in matching rating forms to the transcripts. Transcripts were randomly assigned to raters using their code numbers so that each rater was given a variety of tapes from groups in both sections of ED T&P 450. Each transcript was assessed by two raters.

Rating procedures included a rating schedule in which raters were initially given six transcripts, five of which were double rated. The sixth transcript was rated by all three raters to provide an additional check on inter-rater reliability. Analysis of inter-rater reliability revealed an 85% agreement between raters A and B, 74% between raters A and C, and 77% agreement between raters B and C. The average agreement between raters was 78.6%. Comparisons between the ratings of the researcher and the raters were also performed and this analysis revealed an inter-rater reliability of 86% between the researcher and rater A, 83% between the researcher and rater B, and 78% between the researcher and rater C. Therefore this analysis showed a good overall agreement between raters and the researcher's standard.

In an effort to improve the rater reliability, another training session was conducted in which several transcripts, already rated, were reviewed. In these transcripts, all thought units, where raters disagreed on their ratings, had been evaluated by the researcher and a written rationale for the researcher's rating was provided to the raters. These areas of disagreement were then discussed. This session was considered, by raters, to be helpful in clarifying category definitions and interpretations. Following this session, raters were given a second set of six
transcripts which were double rated (again one was rated by all three raters). When these transcripts had been analyzed by the raters, a second check on inter-rater reliability was performed. This analysis showed no change between raters A and B but did show an improvement in the interrater reliability between raters A and C (77%) and raters B an C (79%). The overall inter-rater reliability was calculated at 80%.

At this point, raters were given a packet of 12 remaining transcripts which completed their scheduled rating. When all the transcripts had been rated, a final interrater reliability analysis was performed. This analysis disclosed a total inter-rater reliability of 79%.

Analysis of Theory/Research-Based Reflection (Question 4)

Raters also analyzed the discourse found in their assigned transcripts to identify statements made in small group discussions in which participants invoked research or theoretically-based educational knowledge in their reflective discourse. Non theory/research-based statements were also tallied.

This rating of research/theory based reflection in discourse was accomplished with a small modification to the analysis of discourse using the Reflective Teaching Index. Raters were asked to note any statements which made use of educational research or theory. A definition of research/theory based reflective statements was included in rater training materials:

Research or theory based reflection is characterized by the explicit or implicit use of educational theory or the findings from research to explain, critique or provide rationale for a pedagogical action. As such research/theory
based reflection falls into the categories of explanatory/hypothetical, justificatory, or critical discourse.

Training of raters in the above procedures was conducted during rater training sessions in conjunction with the Reflective Teaching Index training regimen. Since no statements were found that incorporated research or theory in any of the transcripts, no further analysis was pursued.

**Statistical Analysis Procedures**

The statistical procedures employed in the study are summarized for each research question. The results of these procedures are reported in Chapter IV.

**Research Question 1:**

- **What types of discourse are expressed most frequently during small group discussions?**

  The data from transcript ratings were subjected to descriptive statistical analysis so as to disclose the types and frequency of types of discourse expressed by participants during small group discussions.

**Research Question 2:**

- **What is the degree of reflection of group discourse during small group discussions?**

  A measure of reflection can be calculated by comparing the reflective to non-reflective discourse. To accomplish this, all of the thought units for each transcript were categorized as reflective (Explanatory, Justificatory, and Critical) or non-
reflective (Factual, and Prudential). In this manner an overall ratio of reflective
discourse was calculated for each of the small group discussions to develop a
reflective profile for each small group.

Research Question 3:

• What is the content of reflection expressed during small group
discussions?

The statements expressed during small group discussion were coded, using
FileMaker Pro database software, according to the category of discourse in which it
had been placed by raters (when raters disagreed the statements were double-
coded). Common themes were developed and the statements were coded using
these themes. When statements involved more than one theme, they were coded
using multiple themes. Using the sorting capabilities of the database, the common
themes of participants in the various categories of discourse were summarized to
provide a qualitative profile of discourse within the small group discussions.

Research Question 4:

• Do designated teachers and learners make use of research/theory-based
  knowledge during small group discussions?

Content analysis was employed to determine if subjects in this study
appealed to research or theory/based pedagogical knowledge during small group
discussions. These statements were tabulated and frequencies were calculated.
Research Question 5:

- Do designated teachers and learners exhibit different patterns of reflection during small group discussions?

To answer question 5, the discourse of designated teachers and learners was calculated for each group by the total thought units in each major category (Factual, Prudential, Explanatory, Justificatory, and Critical discourse). Subsequently, ratios (thought units by category/total thought units) were calculated for each category of reflection which produced five outcome measures. Teachers and learners were treated as two levels of small group participants. The multivariate analysis consisted of a one-way between groups MANOVA with an accompanying Descriptive Determinant Analysis.

Research Question 6:

- What relationships exist between Reflective Teaching variables and the discourse category variables during small group discussions?

To answer question 6, a canonical correlation analysis was performed on the two sets of variables. In this manner any complex relationships that might exist between variables in the two sets could be determined.

Summary

This study involved an effort to identify the characteristics of discourse that takes place in Reflective Teaching during small group discussions. Data was collected during Reflective Teaching sessions by videotaping small group discussions. These videotapes or transcripts were analyzed to place discrete thought
units into the categories of the Reflective Teaching Index (Zeichner and Liston, 1985). Descriptive statistics and content analysis were used to identify and characterize the nature of discourse in the transcripts. Multivariate analysis was employed to investigate differences that existed in quality of instruction, level of experience in Reflective Teaching and participant degree of reflection. The results of the data analyses are detailed in chapter IV.
CHAPTER IV
RESULTS

This chapter reports the results of the data analyses conducted to address each of the study's research questions and is divided into four major sections. Section one summarizes the findings from descriptive analyses of the data to address research questions 1-4. The second section presents a multivariate analysis of the differences between designated teachers' and small group learners' discourse and employs descriptive discriminant analysis. Section three describes a canonical correlation analysis of the relationship between measured small group factors (learner satisfaction, learner achievement, small group leadership, and small group instructional quality) and measured categories of discourse. The final section presents a summary of the research findings.

Descriptive Analyses of Frequency and Content of Discourse

This first section presents descriptive analyses of the data and addresses the first four research questions regarding the frequency and types of discourse expressed during small group discussions. Research questions one and two are addressed through a statistical analysis of the types of discourse expressed and the degree to which small groups engage in reflective discourse. Research questions three and four are addressed through a content analysis to develop a qualitative
description of the common themes which comprise the discourse of teachers and learners in small group discussions.

**Research Question 1**

*What types or categories of discourse are expressed most frequently during small group discussions?*

**Descriptive Statistics Computed on Group Discourse Data**

Descriptive statistics were calculated for each of the four major discourse categories (Factual Discourse, Prudential Discourse, Justificatory Discourse, and Critical Discourse). Table 5 presents frequencies and ratios that represent the proportion of thought units for each of the major categories and subcategories of the Reflective Teaching Index based on 719 total reflective thought units (RTUs). It should be noted that since no statistical differences were found between the discourse frequencies for the two sections of ED 450, the two sections were treated as a single sample for the purposes of this analysis.

Examination of the means in Table 5 for the four major discourse categories, revealed that the categories of Prudential (38.7%) and Factual (28.8%) discourse were most frequently represented in the small group Reflective Teaching discussions. Together the Factual and Prudential categories account for 68% of the discourse. Two other discourse categories, Justificatory (16.4%) and Explanatory (14%) discourse combined for an additional 30% of the discourse that occurred in Reflective discussions. Finally, Critical discourse comprised less than 2% of the small group statements.
Table 5 also identifies those subcategories that most strongly contribute to the discourse defined by the major categories. The Informational subcategory accounts for 92.2% Factual discourse using the ratio of Informational to total Factual thought units. Similarly, the Evaluation subcategory accounts for 55.4% of Prudential discourse while Instruction and Support contribute 22.6% and 15.8% of Prudential discourse respectively. In the Justificatory category, Pragmatic discourse accounted for 66% of the thought units expressed with Intrinsic discourse comprising the remaining 34%. Finally although relatively little Critical discourse was expressed by participants, nearly all such statements were classified as Pragmatic Critical discourse (80%).
<table>
<thead>
<tr>
<th>Discourse Category</th>
<th>Thought Units</th>
<th>Ratios (Category/Total)</th>
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</thead>
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<tr>
<td>Critical Intrinsic</td>
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<tr>
<td>Critical Extrinsic</td>
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<td>.000</td>
</tr>
<tr>
<td>Critical Curr./Inst.</td>
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<td>.001</td>
</tr>
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</table>

n = 36, Total thought units = 719

*Frequencies and ratios for the explanatory category were partialled out of the Factual category and reported separately.
Research Question 2

What is the degree of reflection of group discourse during small group discussions?

Descriptive Analysis of the Reflection of Group Discourse

The degree of reflection, as defined in this study, is the amount of reflection calculated for each of the small group discussions by summing the thought units in each of the three reflective categories: Explanatory (E), Justificatory (J) and Critical (C). In this manner, an overall ratio of reflective statements to total statements was calculated for each small group (Deg. of reflection = (E + J + C) / Total TUs).

Table 6 presents the degree of reflection for each of the small group sessions arranged by RTL. Degree of Reflection ratings ranged from a minimum of .08 to a maximum of .65, and the overall proportion of reflective statements was .325 or 32.5% of the total discourse. Critical discourse occurred in just five of the group discussions and these are noted with an asterisk.

A chi-square test for independence was conducted to determine if a relationship existed between type of RTL and the reflection generated. This analysis indicated that no significant relationship existed between the type of RTL and amount of reflection, \( \chi^2 (4, n=36) = 7.16, p < .05 \). Since RTLs were selected to control for differences in the type of teaching task, this analysis confirmed that RTLs assigned to subjects were similarly efficacious in generating reflective discourse.

These findings help define the reflective nature of group discourse since the degree of reflection represents the portion of a group’s discourse that is considered reflective. The results shown in Table 6 indicate that on average nearly one-third of the discourse in small group discussions was characterized by reflective statements while two-thirds of the statements were non-reflective (factual or prudential).
<table>
<thead>
<tr>
<th>Learning Domain</th>
<th>Reflective Teaching Lesson</th>
<th>Degree of Reflection</th>
<th>Thought Units</th>
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<td>Origami</td>
<td>.22</td>
<td>9</td>
</tr>
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<td>.42</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>Magic Square</td>
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<td>10</td>
</tr>
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<td></td>
<td>Magic Square</td>
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<td>Magic Square</td>
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<tr>
<td></td>
<td>Discipline in Elementary</td>
<td>*.44</td>
<td>39</td>
</tr>
</tbody>
</table>

* Indicates groups in which Critical discourse was identified by raters.

Overall proportion of reflective thought = 32.5%

Degree of reflection = group's reflective thought units/total group thought units
Research Question 3

What is the content of reflection expressed during small group discussions?

Content Analysis of Small Group Discussions

In sections one and two of this chapter, descriptive findings were presented which provide a numerical profile of the discourse expressed in the small groups examined in this study. In this section, further analysis is pursued in order to more fully characterize small group discourse. Content analysis was employed to explore the essential nature of the discourse of teachers and learners in small group discussions. The results of this analysis are presented in two sections.

The first section summarizes the themes which characterize the various categories of discourse, and focuses on those subcategories that were most represented in Reflective Teaching discussions. The non-reflective categories of Factual (Informational) and Prudential (Instruction, Evaluation and Support) will be presented first followed by the results of analyses of the reflective categories, Explanatory, Justificatory (Pragmatic and Intrinsic) and Critical. The discourse subcategories of Descriptive, Hermeneutic, Advice/Opinion and Extrinsic are not profiled since relatively few thought units were expressed in these categories.

The second section presents findings from an analysis of the flow of discourse and summarizes the patterns of discourse and essential purposes that most typified the general course of discourse in the small group discussions.

Analysis of the Characteristics of Discourse by Categories

Informational discourse is a subcategory of Factual discourse in which an individual identifies information relevant to an action or event in the lesson but that is
not verifiable by direct observation. Informational discourse expressed by participants was characterized by personal disclosure: students disclosed information about themselves and teachers similarly offered information concerning their experience or thinking.

Learners were concerned primarily with offering personal disclosure to their designated teacher regarding: (1) areas of misunderstanding concerning the lesson including a lack of background knowledge; and (2) insights concerning their thinking during the Reflective Teaching lesson. A typical learner comment disclosing their lack of understanding was, "For some reason when you were doing it (modeling it) I didn't get the step of going to the right." Representative of statements made by learners intended to help the designated teacher understand their thinking was, "I was trying to concentrate on the exact words. I was trying to pick the card you were using."

Teachers employed Informational discourse to reveal a variety of insights regarding their thinking about the lesson they presented. The most common personal disclosure that designated teachers made involved the difficulty of their planning preparation and the effort required to understand the concept themselves. Typical comments offered by designated teachers included statements like, "I had to do it five times myself before I got it (understood the process of their instructional task)." In this regard teachers often expressed being out of their element and feeling unprepared to understand the concept they were expected to teach. Another common type of information offered by designated teachers involved disclosing their thinking and intentions during instruction. In some cases these statements involved events or actions taken such as, "I was trying to get at different learning styles" or "I
definitely wanted you to help your neighbors." In other instances designated teachers spoke about actions that they would like to have taken: "I was going to do flashcards after we went through the list and you had a chance to look at the definitions."

*Instructional discourse* falls within the category of Prudential discourse and involves suggestions that a teacher try a particular approach or action. As such, most of these statements were made by learners. While it is difficult to characterize these statements, the most common suggestions focused upon *actions* the designated teacher could take to make the lessons more meaningful (relevant or interactive). Learners frequently suggested that the designated teacher involve the learners more, and they offered suggestions such as, "You could have promoted more discussion amongst us - talk about experiences we've had" and "Well the subject matter was pretty dry. If you could have given your personal experiences and then had us give our personal experiences from our school days." The content of teacher's Instructional discourse typically involved suggestions they made to themselves regarding practical concerns of implementation.

*Evaluative discourse* is also a subcategory of Prudential discourse and encompasses statements in which participants offer a positive or negative judgement about the value, worth or quality of a pedagogical action. It should be noted that learners expressed the vast majority of evaluative statements (81%).

The most common judgments expressed by learners were omnibus statements about the lessons (approximately 25% of Evaluation discourse) that could be characterized as *praise* such as, "You did a good job" or "I think you did really well." In contrast to general evaluative statements, learners also focused on
specific aspects of the lesson or the teacher’s presentation. These *focused judgments* most frequently involved three major themes (totaling 66% of Evaluation discourse). Learners talked about *clarity of presentation* especially noting what they considered to be good sequencing of the lesson or actions that simplified a concept. With regard to presentation, learners positively critiqued teachers for their *knowledge of the subject* and *personal qualities* such as patience and enthusiasm. Learners frequently criticized the tests given, and when they expressed judgments about the effectiveness of a lesson, they seemed to do so based on their test performance.

Finally, learners used the rationale of *time constraints* as a means to soften criticism. For example one learner commented, "I think that my problem wasn't so much related to what you did - it was just the time constraints and my own inability to get it."

*Support discourse* is characterized by an expression of empathy or emotive encouragement for a past, present or future action. Most statements identified as supportive were expressed by learners; most typically support was expressed in response to self-criticism by the designated teacher with regard to their performance. On a basic level, support was characterized by *simple agreement* with statements like, "Yes there would be no other way (to approach the lesson)." More complex statements involved *empathy and affirmation* of teacher actions. For example after a teacher had finished making a self-deprecating remark about playing the part of a Zoologist, one of the learners attempted to buoy the teacher with, "You weren't falling apart at all. The role (Zoologist) was really good and you didn't lose it."
Explanatory discourse identifies cause-and-effect relationships that occur in educational settings. Learners were somewhat more prone to make explanatory statements as approximately 60% of Explanatory discourse was attributed to learners. The cause-and-effect relationships identified by participants did not seem to address common phenomena but were tied to the context of the lesson. What was common amongst these statements was a recognition of cause-and-effect relationships that are based on sound pedagogical generalizations. Examples of these are: (1) student involvement increases learner satisfaction; (2) communicating lesson purposes contributes to understanding; (3) visual stimuli promotes attention and recall; (4) clarity of presentation promotes understanding; (5) and relevance of a task to learners contributes to understanding. None of these statements directly appealed to pedagogical knowledge but rather were ideas generated from the context of the Reflective Teaching lessons.

Pragmatic Rationale discourse is a subcategory of Justificatory discourse in which pragmatic rationale is offered to justify pedagogical action based on its effectiveness of efficiency to effect an outcome. Analysis of the thought units identified as Pragmatic discourse revealed that the most common rationale advanced by subjects involved the themes of time and testing concerns. In roughly 63% of these statements participants used time as a rationale for teacher actions with the majority (75%) expressed by designated teachers. Typical time related rational expressed were, "I was going to explain that, but I didn't have enough time" and "I originally planned to utilize an overhead projector with just the words and go over each one specifically and give you basically this working definition, but I couldn't
exactly do that in ten minutes." Learners also offered time as a rationale to justify the mechanical or routine approaches taken by the designated teacher.

The other major theme of Pragmatic discourse involved the participant's focus on the tests given at the conclusion of Reflective Teaching and it was largely teachers who appealed to the demands of assessment to justify their actions. Employing this rationale, teachers argued that their actions were predicated on a concern that the learners perform well on the test. This rationale also seemed to be justification for rote learning as one designated teacher said, "Although we've been throwing around ideas about fun ways to do vocabulary, if you have ten minutes, you basically have to teach to the test."

Intrinsic Rationale discourse is offered to justify a pedagogical action based on beliefs about universal knowledge, values, or student needs. Statements identified as an intrinsic rationale were evenly distributed between teachers and learners. Teachers tended to focus on aspects of the learning process or needs of the learners, invoking the learners perspective, background knowledge, learning style, motivation and interest as justification for their teaching decisions. Teachers also focused on aspects of the lesson that might influence the learning process such as the organization, simplicity, and the relevance of the task. Typical statements included, "I rewrote these rules - I tried to put them in a little bit more understandable English" and "So that's why I made these boxes - to try to help you visually and also with the colors and stuff to try to adapt to different learning styles." Students used the same kinds of rationale as the teachers in similar proportions but focused their comments on the teaching act.
Critical discourse is divided into several subcategories and is identified by its focus on the adequacy of rationale advanced in justificatory discourse. Since there was relatively little critical discourse identified in the statements of subjects, the following comments summarize critical discourse as a whole.

Each of the statements identified as critical discourse were offered in response to a justificatory statement and either challenged or agreed with the justificatory rationale. For example, in one conversation concerning a discussion over the RTL test, the designated teacher challenged the validity of the test to which one of the learners replied, "If we were to have written an essay on what makes an effective teacher, that would have been a more effective assessment of what you were trying to get across and probably would have been better for the lesson overall than what they (RTL authors) did." This statement both affirmed the value of the teacher's rationale and attacked the nature of the curriculum.

Several discussions which involved teaching dilemmas (e.g. "teaching to the test") evoked a line of thought in which students first examined the problem in its immediate context and then extended the dialogue to consider implications of the issue to the context of schools and their future roles as teachers. One group for instance noted the dilemma that faces teachers in confronting the demands of a prescribed curriculum and attendant pressures to prepare students to simply "pass the test."

Analysis of Overall Patterns of Discourse

An analysis of the overall patterns of discourse focused on the purpose and direction of the talk in small group discussions. In this analysis, each transcript was divided into segments based on the changing purpose of the discourse. Taken
together, the statements within one of these segments defined the basic communicative objective of the group. In addition, this analysis documented the basic direction of the discourse (i.e. whether the discourse was linear or cyclical). The results of this analysis are summarized below.

The following discussion is prefaced by the observation that in general designated teachers were non-directive and seemed uncomfortable with their role in leading a reflective discussion of their teaching. As the subsequent discussion will reveal, small group discourse typically focused on the presentation and approach of the designated teacher, and it was apparent that the designated teachers generally seemed to regard the small group discussions as a critique of their teaching.

The most common pattern of discourse, which occurred in 80% of the small group discussions, was a cyclical pattern in which: (1) the teacher described and gave rationale for their approach; (2) learners critiqued the instruction; (3) the teacher justified the instructional approach; and learners reinforced their choice or critiqued some other aspect of the lesson. In these discussions, the most common leadership style was one in which the designated teacher read the prepared questions in a passive manner rather than using the questions to address unique aspects of their lesson.

In cyclical discourse, the designated teacher typically began with a brief review of the approach they had used in their Reflective Teaching lesson, often with a stated or implied rationale. Following this, the discourse moved to an analysis of the instruction. This analysis/feedback involved suggestion, critique, and evaluation. If the designated teacher was overly self-critical in his/her initial review of the approach then the learner analysis usually began with statements of support. As the
group of learners provided critique of the lesson, designated teachers consistently responded with statements of further detail regarding their thinking and or statements which justified their instructional approach. These exchanges typically cycled several times in the discussion and routinely returned to focus on the instructional approach used in the Reflective Teaching lesson.

In these cyclical discussions, the designated teachers seemed to be concerned with validating their teaching performance. In fact some of the discussions were focused so intently on instructional approach that they could be characterized as spiral in the sense that these discussions repeatedly returned to the focus of instructional approach but in ever narrowing circles. Consequently the discussion reduced a more elaborate initial description of instructional approach to a short summary phrase or key idea toward the end of the discussion. One discussion, that exemplified this structure, began with the designated teacher explaining her decision-making and planning that led to her instructional approach. In her explanation, the designated teacher spoke at length about using an interactive approach and the constraint of time on learning. At the very end of the discussion, the designated teacher and learners determined that a hands-on approach was the only way to approach the task. In the words of the designated teacher, "Well with this (kind of task), that's all you could do with it."

The other small group discussions followed a variety of patterns. In these, two other patterns are worth noting. The first of these could be characterized by a radial pattern, with the designated teacher as the focal point and interacting more uniquely with each of the learners. Again teachers typically used the prepared questions and while many of these were very close in structure to the cyclical
pattern, the discourse lacked the back and forth turn taking between teacher and learner and the issues addressed by the group were more divergent. Another unique pattern figured prominently in one small group discussion in which the pattern of discourse could be thought of as *emergent* and focused on the teaching and learning that had been observed during the formal lesson. In this group, participants seemed to engage in collaborative analysis and the discourse moved from description of the approach to group analysis and finally to a summary of what was learned. It should be noted that this discussion was guided (not controlled) by the prepared questions provided to all designated teachers. Therefore three patterns emerged: cyclical, radial, and emergent. Of these, the cyclical was most prominent and the cyclical and radial were most closely related.

Finally a key element of discourse involved the overall locus of discussion. Discussions either focused on the performance of the designated teacher or focused on instruction. Approximately two-thirds of the small group discussions focused on the teacher's performance and this focus was dictated by the questions posed by the designated teacher.

**Research Question 4**

*Do designated teachers and learners make use of research and theory-based knowledge during small group discussions?*

A content analysis was used to determine if subjects in this study appealed to research or theory-based pedagogical knowledge in order to support their analysis of the lessons in which they were involved as either teachers or learners.
Research and Theory-Based Knowledge in Discourse

Analysis of discourse by raters revealed no direct appeal by teachers and learners to research or theory-based pedagogical content knowledge. Therefore no further systematic analysis of the discourse was warranted in this area.

Subjects did express accepted educational ideas, however these ideas were not invoked from previous knowledge but rather emerged from their RT experience. For example, learners generalized that *student involvement increases learner satisfaction* and *communicating lesson purposes contributes to understanding* as a result of experiencing and discussing their own involvement. Therefore these ideas were "discovered" in the context of RT and emerged from the experience rather than being brought to RT.

Comparison of the Discourse of Teachers and Learners

This section describes the results of a comparative statistical analysis of designated teachers' and learners' discourse in small group discussions. Multivariate techniques including descriptive discriminate analysis were employed to determine any differences that might exist between the discourse of these two groups.

Research Question 5

*Do designated teachers and learners exhibit different patterns of reflection during small group discussions?*

Preliminary Data Exploration

Before proceeding with the multivariate analyses (in question 5 and 6), boxplots were constructed on each dependent variable using the Minitab Statistical
Analysis software. Analysis of these figures indicated some positive skewing of data which is a typical pattern when data are bounded by zero (Emerson & Stoto, 1983). A check for normality was conducted on each dependent variable using a test for normality suggested by Shapiro and Wilk (1965). These tests indicated correlations at levels consistent with normality using a critical value of .95 (n = 36, \( \alpha = .01 \)).

**Descriptive Statistics of Discourse Data**

Descriptive statistics were calculated for each of the discourse categories across the designated teacher and learner groups. Discourse category means and standard deviations for the five discourse categories are presented in Table 6 by designated teacher and learner groups. The reader should note that the means for learners and teachers are widely separated in two discourse categories: Prudential (teachers \( M = .089 \) and learners \( M = .275 \)) and Justificatory discourse (teachers \( M = .110 \) and learners \( M = .065 \)).

**Variances, Covariances and Correlations of Discourse Data**

The inter-relationships among response variables are summarized in Table 7. The portion of the matrix displaying correlations between the two sets of variables is highlighted. Of central interest to this analysis are the several significant negative correlations between student and designated teacher discourse variables: (1) teachers' factual and students' factual \( (r = -.36, p < .03) \); (2) teachers' factual and students' prudential \( (r = -.34, p < .04) \); (3) teachers' explanatory and students' prudential \( (r = -.34, p < .04) \); and (4) teachers' justificatory and students' explanatory \( (r = -.34, p < .04) \). One strong positive correlation between teachers' and learners' critical discourse \( (r = -.92, p < .00) \) should also be noted.
Table 6
Discourse Category Means and SDs
by Designated Teacher and Learner Groups

<table>
<thead>
<tr>
<th>Variable</th>
<th>Teachers (n=36)</th>
<th>Learners (n=36)</th>
<th>Overall (n=72)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>Factual Discourse</td>
<td>.155</td>
<td>.123</td>
<td>.146</td>
</tr>
<tr>
<td>Prudential Discourse</td>
<td>.089</td>
<td>.069</td>
<td>.275</td>
</tr>
<tr>
<td>Explanatory Discourse</td>
<td>.054</td>
<td>.058</td>
<td>.081</td>
</tr>
<tr>
<td>Justificatory Discourse</td>
<td>.110</td>
<td>.096</td>
<td>.065</td>
</tr>
<tr>
<td>Critical Discourse</td>
<td>.006</td>
<td>.006</td>
<td>.011</td>
</tr>
</tbody>
</table>

Note: Means reflect the average discourse of small group discussions where learner discourse is considered separate from the designated teacher.
Table 7  
Variance, Covariances (Upper Right), and Correlations (Lower Left) of Discourse Variables

<table>
<thead>
<tr>
<th>Discourse Variables</th>
<th>DS1</th>
<th>DS2</th>
<th>DS3</th>
<th>DS4</th>
<th>DS5</th>
<th>DT1</th>
<th>DT2</th>
<th>DT3</th>
<th>DT4</th>
<th>DT5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Factual (DS1)</td>
<td><strong>.0081</strong></td>
<td>.0013</td>
<td>.0016</td>
<td>-.0031</td>
<td>-.0009</td>
<td>-.0040</td>
<td>-.0007</td>
<td>.0003</td>
<td>-.0019</td>
<td>-.0005</td>
</tr>
<tr>
<td>Student Prudent. (DS2)</td>
<td>.1122</td>
<td><strong>.0160</strong></td>
<td>.0002</td>
<td>-.0020</td>
<td>-.0001</td>
<td>-.0053</td>
<td>-.0006</td>
<td>-.0025</td>
<td>-.0030</td>
<td>-.0002</td>
</tr>
<tr>
<td>Student Explan. (DS3)</td>
<td>.2441</td>
<td>.0177</td>
<td><strong>.0053</strong></td>
<td>-.0004</td>
<td>-.0002</td>
<td>-.0019</td>
<td>-.0009</td>
<td>-.0001</td>
<td>-.0024</td>
<td>-.0002</td>
</tr>
<tr>
<td>Student Justif. (DS4)</td>
<td>-.4859</td>
<td>-.2248</td>
<td>-.0727</td>
<td><strong>.0049</strong></td>
<td>.0008</td>
<td>.0002</td>
<td>-.0004</td>
<td>-.0010</td>
<td>-.0001</td>
<td>.0004</td>
</tr>
<tr>
<td>Student Critical (DS5)</td>
<td>-.2832</td>
<td>-.0038</td>
<td>-.0854</td>
<td>.3346</td>
<td><strong>.0013</strong></td>
<td>-.0006</td>
<td>-.0004</td>
<td>-.0002</td>
<td>-.0004</td>
<td>.0007</td>
</tr>
<tr>
<td>Teacher Factual (DT1)</td>
<td>-.3626</td>
<td>-.3410</td>
<td>-.2137</td>
<td>.0241</td>
<td>-.1294</td>
<td>.0152</td>
<td>.0033</td>
<td>.0007</td>
<td>-.0002</td>
<td>-.0001</td>
</tr>
<tr>
<td>Teacher Prudent. (DT2)</td>
<td>-.1095</td>
<td>-.0721</td>
<td>-.1775</td>
<td>-.0788</td>
<td>-.1621</td>
<td>.3846</td>
<td><strong>.0049</strong></td>
<td>.0009</td>
<td>.0003</td>
<td>-.0003</td>
</tr>
<tr>
<td>Teacher Explan. (DT3)</td>
<td>.0534</td>
<td>-.3399</td>
<td>-.0341</td>
<td>-.2351</td>
<td>-.1082</td>
<td>-.1014</td>
<td>.2215</td>
<td>.0035</td>
<td>-.0018</td>
<td>-.0001</td>
</tr>
<tr>
<td>Teacher Justif. (DT4)</td>
<td>-.2199</td>
<td>-.2479</td>
<td>-.3491</td>
<td>-.0190</td>
<td>-.1079</td>
<td>.0188</td>
<td>-.0402</td>
<td>-.3179</td>
<td><strong>.0092</strong></td>
<td>-.0002</td>
</tr>
<tr>
<td>Teacher Critical (DT5)</td>
<td>-.2512</td>
<td>-.0711</td>
<td>-.1150</td>
<td>.2690</td>
<td>.9177</td>
<td>-.0343</td>
<td>-.2119</td>
<td>-.0562</td>
<td>-.0879</td>
<td><strong>.0004</strong></td>
</tr>
</tbody>
</table>

Variances are displayed in bold along the diagonal. 
$p$ values below each significant correlations.
Descriptive Discriminate Analysis of Discourse Measures

Assuming significant differences are found in an initial multivariate MANOVA analysis, descriptive discriminate analysis (DDA) can be employed to disclose specific descriptions and interpretations of overall MANOVA effects (Huberty, 1984). In analyzing teacher and learner discourse data, response measures were analyzed using a two group DDA with an accompanying one-factor MANOVA performed by PROCs CANDISC and GLM in the Statistical Analysis System (SAS).

A summary of the multivariate analyses is presented in Table 8. The omnibus multivariate statistic, Wilks' lambda \( L = .5194, F(5,66) = 12.22, p < .0001 \) indicated significant differences between the patterns of teacher and learner discourse. Table 8 also summarizes the results of univariate ANOVAs performed on the five response measures. Finally Table 8 includes a summary of the linear discriminant function and reports the standardized discriminant weights and the structure coefficients for each variable. The standardized weights reflect the contribution of each dependent variable to the discriminant function while the structure coefficients represent the correlations between the discriminant function and the dependent variables.

Examination of the standardized weights and structure coefficients in Table 8 suggest that the discriminant function separates the teacher and learner groups largely on the basis of Prudential discourse (advice and critique). The correlations between the other dependent variables, Factual (-.05), Explanatory (.21), Justificatory (-.30) and Critical discourse (.08) and the discriminant function indicate that these variables are less influential in differentiating between the teachers and learners, although attention should be given to the negative correlation (-.30) between Justificatory discourse and the discriminant function.
Table 8
Summary of Univariate and Multivariate Analyses
of Variance of Discourse Measures

<table>
<thead>
<tr>
<th>Measures</th>
<th>NDF</th>
<th>DDF</th>
<th>F</th>
<th>p</th>
<th>Standardized Weights</th>
<th>Structure Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factual Discourse</td>
<td>1</td>
<td>70</td>
<td>0.15</td>
<td>.7031</td>
<td>.013</td>
<td>-.05</td>
</tr>
<tr>
<td>Prudential Discourse</td>
<td>1</td>
<td>70</td>
<td>60.04</td>
<td>.0001</td>
<td>.945</td>
<td>.96</td>
</tr>
<tr>
<td>Explanatory Discourse</td>
<td>1</td>
<td>70</td>
<td>2.92</td>
<td>.0921</td>
<td>.109</td>
<td>.21</td>
</tr>
<tr>
<td>Justificatory Discourse</td>
<td>1</td>
<td>70</td>
<td>5.34</td>
<td>.0238</td>
<td>-.191</td>
<td>-.30</td>
</tr>
<tr>
<td>Critical Discourse</td>
<td>1</td>
<td>70</td>
<td>0.42</td>
<td>.5183</td>
<td>.167</td>
<td>.08</td>
</tr>
</tbody>
</table>

L = .5194; F(5,66) = 12.22, p = .0001
Pillai’s Trace = .4806, F(5,66) = 12.22, p = .0001

Note: Standardized Weights and Structure Coefficients are based on pooled within-group SDs and within-group correlations, respectively.
In order to further interpret the underlying discriminant function, univariate ANOVAs on each of the five response measures were examined. The summary of ANOVAs on response variables in Table 8 reveals two significant differences in the discourse of teachers and learners. One of these occurred between the Prudential discourse ($F(1,70) = 60.04, p<.0001$) of designated teachers and learners and the other was found between the Justificatory discourse ($F(1,70) = 5.34, p < .0238$) of teachers and learners.

The robust $F$ value for the ANOVA on Prudential discourse further confirms the difference that exists between the amount of Prudential discourse expressed by participants. Coupled with the strong positive value of the structure coefficient for Prudential discourse cited above, this analysis indicated that learners offered significantly more Prudential discourse (i.e. statements focused on giving advice or critique of the lesson) than designated teachers during small group discussions. This difference is seen in a comparison of the amount of Prudential discourse expressed by learners and teachers. Over all the groups rated, learners expressed 211 Prudential statements (75.9% of Prudential discourse) while teachers made 67 Prudential statements (24.1% of Prudential discourse).

Similarly the univariate ANOVA for Justificatory discourse showed a significant difference between the extent to which teachers and learners expressed Justificatory discourse. Although less dramatic than the previously cited differences for Prudential discourse, the negative value of the structure coefficient (-.30) for Justificatory discourse along with the significant ANOVA for Justificatory discourse indicated that teachers were prone to offer significantly more Justificatory discourse than learners. This difference is reflected in the amount of Justificatory discourse for
teachers and learners. Overall, teachers made 67 Justificatory statements (56.8% of Justificatory discourse) while learners made 51 Justificatory statements (43.2% of Justificatory discourse).

In summary, the results of this analysis indicated that teachers and learners were separated along two variables that contribute to the discourse in small group discussions: Prudential and Justificatory discourse. The analysis suggests that while learners expressed significantly more Prudential discourse (offering advice and critique), teachers expressed significantly more Justificatory discourse (providing rationale for instructional choices).
Analysis of Reflective Teaching and Discourse Variables

The following section summarizes the results of a multivariate analysis intended to explore and identify relationships which might exist between the four Reflective teaching measures (learner satisfaction, learner achievement, small group discussion leadership, and instructional quality) and the five discourse variables (Factual, Prudential, Explanatory, Justificatory, and Critical) in small group discussion following Reflective Teaching.

Research Question 6

What relationships exist between Reflective Teaching variables and the discourse category variables measured during Reflective Teaching small group discussions?

Canonical Correlation Analysis of Reflective Teaching and Discourse Variables

Canonical correlation analysis is a statistical technique which discloses complex relationships between two sets of variables to determine the number and nature of relationships that exist between those variables (Darlington, Weinberg, and Walberg, 1973). Essentially this analytic technique determines linear combinations of one set of variables that are most highly correlated with linear combinations of the other set (Tatsuoka, 1988). In so doing canonical correlation analysis identifies components of the two sets which have the strongest mutual relationship.

The inter-relationships between variables are summarized in Table 9. The portion of the matrix displaying correlations between the sets of variables is highlighted.
<table>
<thead>
<tr>
<th>Discourse Variables</th>
<th>RT1</th>
<th>RT2</th>
<th>RT3</th>
<th>RT4</th>
<th>Diss1</th>
<th>Diss2</th>
<th>Diss3</th>
<th>Diss4</th>
<th>Diss5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learner Satisfaction (RT1)</td>
<td>1.052</td>
<td>.672</td>
<td>.533</td>
<td>2.815</td>
<td>-.001</td>
<td>-.017</td>
<td>-.013</td>
<td>.017</td>
<td>.012</td>
</tr>
<tr>
<td>Achievement (RT2)</td>
<td>.3387</td>
<td>3.746</td>
<td>.162</td>
<td>.038</td>
<td>-.021</td>
<td>.027</td>
<td>-.017</td>
<td>-.009</td>
<td>.029</td>
</tr>
<tr>
<td>(.041)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small Group Leadership (RT3)</td>
<td>.1425</td>
<td>.0229</td>
<td>13.314</td>
<td>-12.165</td>
<td>-.117</td>
<td>-.043</td>
<td>.002</td>
<td>.116</td>
<td>.033</td>
</tr>
<tr>
<td>Instructional Quality (RT4)</td>
<td>.3431</td>
<td>-.0024</td>
<td>-.4167</td>
<td>63.989</td>
<td>.166</td>
<td>-.050</td>
<td>.053</td>
<td>-.105</td>
<td>.041</td>
</tr>
<tr>
<td>(.041)</td>
<td></td>
<td></td>
<td>(.011)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factual Discourse (Diss1)</td>
<td>-.0006</td>
<td>-.0869</td>
<td>-.2562</td>
<td>.1696</td>
<td>.015</td>
<td>-.008</td>
<td>.001</td>
<td>-.005</td>
<td>-.002</td>
</tr>
<tr>
<td>Prudential Discourse (DT2)</td>
<td>-.1152</td>
<td>.1005</td>
<td>-.0846</td>
<td>-.0449</td>
<td>-.4595</td>
<td>.020</td>
<td>-.002</td>
<td>-.005</td>
<td>-.001</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(.005)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explanatory Discourse (DT3)</td>
<td>-.1338</td>
<td>-.0926</td>
<td>.0048</td>
<td>.0716</td>
<td>.0411</td>
<td>-.1802</td>
<td>.008</td>
<td>-.006</td>
<td>-.001</td>
</tr>
<tr>
<td>Justificatory Discourse (DT4)</td>
<td>.1438</td>
<td>-.0404</td>
<td>.2704</td>
<td>-.1116</td>
<td>-.3355</td>
<td>-.3130</td>
<td>-.5142</td>
<td>.014</td>
<td>.001</td>
</tr>
<tr>
<td>Critical Discourse (DT5)</td>
<td>.2078</td>
<td>.2723</td>
<td>.1669</td>
<td>.0940</td>
<td>-.2976</td>
<td>-.1165</td>
<td>-.1358</td>
<td>.1053</td>
<td>.003</td>
</tr>
</tbody>
</table>

Variance are displayed in **bold** along the diagonal. 

*p values below each significant (α=.05) correlation.*
The first step in canonical analysis is to determine the number of significant variates that underlie the relationship between the two sets of variables. Table 10 presents the canonical correlations, squared correlations, significance test results and redundancies corresponding to the four canonical variates computed for the discourse variables. An examination of these results in Table 10 revealed no significant roots for the canonical correlations. Therefore, based on the canonical analysis, no meaningful relationships between the set of Reflective Teaching variables and the discourse variables were indicated.
Table 10
Summary of Canonical Correlation Analysis
Between RT Variables and Discourse Variables

<table>
<thead>
<tr>
<th>Roots</th>
<th>Canonical Correlation</th>
<th>Squared Canonical Correlation</th>
<th>Eigenvalue</th>
<th>Likelihood Ratio</th>
<th>Num. df</th>
<th>Den. df</th>
<th>F Value</th>
<th>P Value</th>
<th>Redundancy(^1) of RT Variables</th>
<th>Redundancy(^1) of Disc. Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.4231</td>
<td>.1790</td>
<td>.2181</td>
<td>.6449</td>
<td>20</td>
<td>90</td>
<td>.6399</td>
<td>.8719</td>
<td>.0381</td>
<td>.0301</td>
</tr>
<tr>
<td>2</td>
<td>.3482</td>
<td>.1212</td>
<td>.1380</td>
<td>.7855</td>
<td>12</td>
<td>74</td>
<td>.5922</td>
<td>.8419</td>
<td>.0355</td>
<td>.0252</td>
</tr>
<tr>
<td>3</td>
<td>.2647</td>
<td>.0701</td>
<td>.0754</td>
<td>.8939</td>
<td>6</td>
<td>58</td>
<td>.5578</td>
<td>.7620</td>
<td>.0167</td>
<td>.0128</td>
</tr>
<tr>
<td>4</td>
<td>.1969</td>
<td>.0388</td>
<td>.0403</td>
<td>.9612</td>
<td>2</td>
<td>30</td>
<td>.6049</td>
<td>.5527</td>
<td>.0099</td>
<td>.0103</td>
</tr>
</tbody>
</table>

\(^1\) Redundancy indicates the proportion of total variance in one variable set that is explained by opposite canonical variable set.
Summary of Results

The analysis of data presented in this chapter revealed that Factual and Prudential discourse shared equally in accounting for two-thirds of the discourse identified while Justificatory and Explanatory largely accounted for the remaining discourse. Within these categories the most frequently identified subcategories were Information, Instruction, and Evaluation. The previous analysis also revealed that approximately one-third of statements during small group discussions were identified as reflective.

Analysis of the content of discourse revealed that designated teachers were largely concerned with their teaching performance. This finding is confirmed by; (1) the informational discourse they offered which provided rationale for their instructional decisions; (2) the instructional discourse expressed which involved suggestions to self about implementation; and (3) the justificatory discourse expressed in which teachers sought to justify their approach. The analysis of overall patterns of discourse also revealed a strong focus on the teaching performance. The most common pattern centered on a back-and-forth exchange in which teachers focused on their instructional approach and sought validation of their instructional decisions and performance while learners supplied information concerning their perceptions of the instructional episode and offered critique and analysis.

Multivariate analysis disclosed significant differences between the patterns of discourse for teachers and learners. Specifically, teachers expressed significantly more Justificatory discourse while learners offered significantly more Prudential discourse.
Canonical correlation analysis of the relationship between Reflective Teaching variables and discourse variables showed no significant relationships between these sets of variables which indicated that the RT variables measured (learner satisfaction, achievement, small group discussion leadership, and instructional quality) did not show a strong relationship to the categories of discourse assessed.

Footnote

Because the dependent measures (discourse measures) were ratios of thought units, several alternative analyses were performed on this data to try and minimize the effect of outliers. Transformation to square roots and natural logs was performed on each of the dependent measures (.5 was added to each of the values since some of the scores were originally zero) and the data analyses were performed on these data. The outcomes of these analyses were essentially the same as for the original data. Therefore the results of the original data were reported.
CHAPTER V
SUMMARY AND DISCUSSION

This chapter presents a summary of the study followed by a discussion of conclusions, implications, and recommendations based upon the findings of the investigation.

Summary

Overview of Study

A reflective approach to teaching has become normative in teacher education. A review of the literature reveals that teacher educators are in agreement concerning the goal to prepare teachers who are committed to lifelong study and growth in teaching. Central to the purposes of reflective teacher preparation is the belief that teachers should carefully, deliberatively, and persistently consider their existing practices and values along with those found in the culture of schools. Although there is overwhelming support for reflective practice in the literature on preservice programs, there has been surprisingly little work done to develop systematic programs or instructional vehicles to promote reflective practice and sensibilities in preservice teachers.

One instructional program that has been used extensively in the past decade is Reflective Teaching (Cruickshank, 1991). Although Reflective Teaching has been well-received by teacher educators, there has been little research conducted to
investigate the way in which it functions or how it might be optimally employed in preservice programs.

This study was based conceptually on recommendations for research on Reflective Teaching by Troyer (1988) and Cruickshank (1987). In response to these recommendations, the primary objective of this study has been to describe and analyze the discourse of participants during Reflective Teaching in order to gain insight into its potential outcomes and benefits.

The basic question addressed in this study was, "What is the nature of the discourse that occurs during the small group discussions of Reflective Teaching?" Specific questions were posed to address various aspects of the nature of discourse in small groups. These were:

1. What types or categories of discourse are expressed most frequently during small group discussions?
2. What is the degree of reflection of the group discourse during small group discussions?
3. What is the content of reflection expressed during small group discussions?
4. Do designated teachers and learners make use of research/theory-based pedagogical knowledge during small group discussions?
5. Do designated teachers and learners exhibit different patterns of reflection during small group discussions?
6. What relationship exists between Reflective Teaching measures (instructional quality, the quality of small group questioning and leadership, learner satisfaction, and learner achievement) and the several categories of discourse that occur in small group discussions?

Subjects for this study were students enrolled in an introductory course of general pedagogy during the winter quarter of 1995. These students (n=36) were observed by means of videotape recordings during the entire span of their Reflective Teaching lessons. By this means a complete record of each Reflective Teaching Lesson was preserved for later analysis.

Transcripts were prepared from the videotape records to document the entire small group discussion for each of the Reflective Teaching Lessons. Subsequently these transcripts were rated by individuals trained in the use of the Reflective Teaching Index, an instrument developed by Zeichner and Liston (1985) and designed to assess the reflective discourse of teachers. This instrument identifies four major categories of discourse (factual, prudential, justificatory, and critical) and several subcategories within each. Raters used this instrument to analyze individual thought units within a transcript and assign these thought units to one of several categories of discourse defined in the Reflective Teaching Index. In addition, each designated teacher's "instructional quality" and "leadership of small group discussion" was assessed by the raters using a Likert scale instrument.

Data analysis included descriptive analyses of: (1) the frequency of discourse ratings by discourse categories; (2) the proportion of reflective to non-reflective discourse by small group; (3) the content of the discourse; and (4) the amount of theory or research-based pedagogical knowledge used in small group discussions.
In addition, multivariate analysis of variance including descriptive discriminant analysis was used to determine if significant differences existed between the discourse of teachers and learners, and a canonical correlation analysis was used to determine if significant relationships existed between Reflective Teaching variables (learner satisfaction, achievement, instructional quality, and small group leadership quality) and the five discourse variables.

Summary of Results

The results of the statistical analyses demonstrated that the small group discourse focused on Factual (including the reflective category of Explanatory discourse) and Prudential discourse (81.5%) and that when the reflective Categories were compared to the non-reflective categories, small group discussions were marked by 32.5% reflective and 67.5% non-reflective discourse. Additionally, the subcategories, Informational (26.5%) and Evaluation (21.4%) predominated as the most common form of discourse expressed and accounted for nearly half of the total discourse.

A content analysis of discourse disclosed the common issues that were discussed within each of the categories and subcategories of discourse. These were described in detail in Chapter IV and will be further discussed later in this chapter. The content analysis also revealed that the preservice teachers being studied did not invoke theory or research-based pedagogical knowledge in analyzing the lessons in which they were participants. Analysis of discourse patterns revealed that small group discussions in general followed a cyclical structure in which the designated
teacher typically initiated the discourse with a review of their approach, followed by an analysis and critique of the lesson and subsequently a response from the teacher.

Based on a multivariate analysis of discourse variables, when teachers were compared with learners it was found that learner's expressed significantly more Prudential discourse than teachers while designated teachers offered significantly more Justificatory discourse than learners. Finally a canonical analysis of Reflective Teaching variables with the four discourse variables revealed no statistically significant relationships between these variables.

Discussion

The intent of this investigation was to examine the nature of discourse as beginning education students engaged in small group discussions in the context of Reflective Teaching. As such, this study provided foundational knowledge concerning the thinking of preservice teachers about educational phenomena, at the beginning stages of their preservice development.

A profile of small group discourse was developed through a descriptive analysis of the frequencies with which participants expressed various types of discourse over all of the Reflective discussions. This profile revealed that 75% of the total small group discourse was defined by four types of discourse: (1) informational (27%); (2) evaluation (21%); (3) explanatory (14%); and (4) pragmatic rationale (11%). Therefore preservice students in these small group discussions focused on: (1) sharing information concerning their covert perceptions of teaching or learning tasks; (2) assessing the value of their educational experience; (3) determining cause
and effect of educational phenomena; and (4) offering rationale for the actions of participants.

In addition, informational and evaluative discourse are considered non-reflective categories since they are non-analytical, descriptive, informational, or opinion statements without the basis of rationale. Therefore the profile above also provides information about the level of reflection exhibited in small group discourse. Specifically the discourse of teachers and learners was characterized by non-reflective discourse categories (information and evaluation) and reflective discourse categories in a 2:1 ratio (the same ratio as determined if all categories are considered). If the overall proportion of reflective to non-reflective discourse is considered, the findings of this study indicated that 32.6% of the discourse fell in the reflective categories (Explanatory, Justificatory, and Critical). This proportion exceeds the value of 19.6% reported by Zeichner and Liston (1985) in their study of the reflection of student teachers following supervisory conferences. The dissimilar contexts certainly may be a possible explanation for this difference in reflection. Also students in this study frequently used the constraints of time in Reflective Teaching as a justification for their opinions and evaluative statements. Concerns about time were frequently invoked as a pragmatic rationale and therefore categorized as reflective discourse, which may also explain some of the difference between the findings of this study and the study of Zeichner and Liston.

Another dimension of discourse which contributed to building a profile of small group discourse involved a quantitative comparison of the discourse of designated teachers and learners. In this analysis, it was found that teachers and learners maintained different foci in the small group discussions. Learners engaged
in significantly more Prudential discourse in which they focused on offering advice, evaluation and support. In contrast, teachers expressed significantly more Justificatory discourse in which they sought to justify or validate their teaching approach and performance.

The relative frequency with which teachers and learners expressed Prudential and Justificatory discourse may in fact be related to the roles assumed by participants and their respective foci in small group discussions. From a content analysis of the small group discussions, learners seemed to assume the role of evaluator while teachers were concerned with soliciting feedback, affirmation, and ultimately validation from the group. This is borne out by the analysis of the patterns of small group discourse in which the most common pattern involves back and forth exchanges and a focus on the designated teacher's instructional approach and performance. Therefore, in one sense, the focus of all participants converged on the instructional approach, but on another level it could be said that the focus of participants diverged: learners focused primarily on the designated teacher (another) or the task, while the focus of the designated teacher was on self.

Interpretation of the overall profile is hardly obvious, however it seems reasonable to suggest that the expression of more non-reflective than reflective thought is based on the idea that reflection requires a context. Indeed as Dewey (1933) suggested, issues or problems give rise to reflection. Therefore non-reflective talk, which was commonly marked by the disclosure of an individual's thinking regarding the RTL, could serve as a springboard or the substance of reflection. This interpretation is supported by the data in that both teachers' and learners'
informational discourse most commonly involved some difficulty or dilemma that was disclosed to the group.

Alternatively, the profile of group discourse developed in this study might have been strongly influenced by the level of knowledge and educational experience of the preservice students who served as subjects. For instance, one might postulate that learners and teachers stopped short of expressing reflective thoughts because they were not able to develop rationale to support their statements or that they assumed the rationale to be inherent in their statements. Such an interpretation is also supported by the data since teachers and learners frequently made statements that could easily have been supported by rather obvious rationale yet no justification was offered to support these statements.

Although each of the interpretations rendered above derive a certain level of support from the data, they most appropriately serve as tentative hypotheses concerning the meaning of the profile of small group discourse developed in this study. Such hypotheses are themselves important theoretical constructs to guide future research in this area.

Thus a descriptive analysis of the data was instructive in developing a quantitative profile of the categories of discourse which were expressed by participants in small group discussions. However further analysis of the ideas and thoughts expressed by teachers and learners provided additional insights concerning the thinking of preservice students as they engage in Reflective Teaching.

The findings suggest that beginning preservice education students are capable of expressing substantive educational concerns. Analysis of Prudential discourse statements revealed that students frequently critiqued the instruction in
Reflective Teaching lessons with respect to the meaningfulness of the overall approach or some specific strategy employed by the designated teacher. In some instances learners praised or valued teacher actions which contributed to the meaningfulness of instruction (e.g. relevant examples, role playing). In contrast, when learners made suggestions or rendered a negative judgment, they usually expressed concern over a lack of interaction or involvement of learners by the designated teacher. Moreover, in several small group discussions, an observation concerning the need to make the instruction more meaningful led to a discussion regarding the relationship of meaning in a learning task to the effectiveness and impact of learning. In so doing, small group participants were acting as "students of teaching" - and achieving one of the desired outcomes of Reflective Teaching.

With regard to evaluative discourse statements, the findings indicate that participants were able to evaluate teaching and learning based upon key educational concepts such as clarity, pace or sequence of the lesson, and effective teacher characteristics (e.g. patience and enthusiasm). Although this phenomenon was not common, its very occurrence bears promise to teacher educators in their efforts to promote reflective practice early in preservice training. Indeed, the students in this study were in the beginning of their educational training, and although they presumably had little knowledge of educational research and psychology, they were able to observe and value sound pedagogical practices.

Perhaps the most intriguing finding concerned the ability of students to infer generalizations about teaching and learning from their involvement in Reflective Teaching lessons. Among the generalizations noted by students, were: (1) student involvement increases learner satisfaction; (2) communicating lesson purpose
contributes to understanding and satisfaction; (3) visual stimuli promotes attention and recall; (4) clarity of presentation promotes understanding; and (5) relevance of a task to learners contributes to understanding and satisfaction. Thus these preservice students were building knowledge about teaching and learning through their shared experience in Reflective Teaching. This is significant for at least two reasons: not only is the generation of knowledge a key objective in Reflective Teaching (Cruickshank, 1991), but construction of knowledge has come to be valued as a *sine qua non* of educational theory and practice.

Another important dimension of discourse examined in this study, concerned the level of reflection exhibited by participants in small group discussions. Based on the relative frequencies of discourse expressed and the content analysis of issues discussed by teachers and learners, it is clear that small group discussions primarily focused on technical aspects of teaching (how to teach). Even in one of the *reflective* categories (Justificatory discourse) the majority of thought units expressed were Pragmatic rationale, and many of these were concerned with the practical problem of time.

The patterns of discourse which were observed also suggest that reflection in the small group discussions focused on technical aspects of teaching and learning and more specifically on the approach taken by designated teachers in presenting their lessons. In the typical pattern of discourse teachers and learners alternated between analysis and critique on the part of learners and justification by designated teachers who seemed to focus on their performance and how well they fared in their teaching. The previous finding that designated teachers were keenly interested in validating their instructional approach lends support to the idea that performance and
teaching approach were of central importance to the preservice students in this study.

Although most of the discourse focused on technical concerns of teaching and learning, a number of small group discussions also probed psychological and ethical issues in the course of their reflection. The fact that participants did consider issues, such as the value of assessment or the demands faced by teachers in schools today, indicates that laboratory experiences like Reflective Teaching have the potential to promote reflection over a range of discourse categories and levels of reflectivity. This finding casts doubt on the assertion that Reflective Teaching serves only to legitimize and promote a technocratic view of teaching and that it perpetuates traditional practices (Gore, 1988; Goodman, 1988).

Attention should be given to appropriate encouragement and stimulation of reflection that focuses on substantive moral and psychological issues. First experiences in reflection seem to naturally focus on more technical aspects of teaching and learning; teacher educators can capitalize on this inclination and use these formative discussions as a springboard for a broader discussion of issues that constitute the educational landscape.

It is not clear what factors caused certain small group discussions to reach higher levels of reflection. Concerning this, one of the research questions was designed to examine the relationship of several Reflective Teaching variables that were considered to be possible contributors to reflection. These were learner satisfaction, student achievement, instructional quality, and leadership of the small group discussion. The findings did not indicate a relationship between these Reflective Teaching variables and the major categories of discourse in the Reflective
Teaching Index, although this finding should be treated with caution due to the small sample size (and lack of statistical power). Therefore future research should focus on other factors which may contribute to the level of reflectivity in small group discourse.

**Implications and Recommendations for Preservice Training**

In a recent study by Metcalf (1994), laboratory experiences were found, in many respects, to be more effective than field-based experiences in preparing preservice teachers. This study also found that those developing laboratory experiences often do so in disregard of the body of research on laboratory experiences. In view of these findings, it would seem prudent for teacher educators and the field of teacher education to seriously reconsider the role of laboratory-based experiences in preservice teacher education. The following recommendations, drawn from this study, are offered to inform those that seek to use and further refine the process and implementation of Reflective Teaching.

First, the results of this study indicate that small group discussions would be enhanced by better preparing students for Reflective Teaching and specifically for small group reflection. This recommendation is based upon two observations: participants did not appear to have a clear purpose in small group discussions; and designated teachers were generally non-directive in their leadership of the small groups and appeared uncomfortable in the role. Therefore such preparation should focus on:

1. helping students develop an accurate conception of the goals of Reflective Teaching. Potentially this could be accomplished by developing learning activities designed to establish the broad purposes of RT. The
kind of short course on the nature and process of reflection, which was shown to be effective by Troyer (1988) for enhancing reflectivity, is one example of a pre-laboratory strategy to establish the purpose of RT.

2. training students in the dynamics of conducting and participating in small group discussions. Not only is such training generally helpful in preparing preservice teachers in the use of cooperative group strategies in their instruction, but implementation of cooperative structures in small group discussions would tend to make Reflective Teaching discussions more productive.

Second, instruction in support of Reflective Teaching should seek to shape the focus of this laboratory experience on the ability to analyze and reflect upon the process of teaching and learning rather than on technical aspects of teaching performance. In this respect, instructors should help students focus on more substantive issues. For example, where students are prone to commend a designated teacher for a "hands-on" approach or recommend the same, a reflective approach to this issue would probe the benefit or justification of a hands-on approach in the given context. Therefore, realizing the inclination of students in this study to oversimplify pedagogical issues, instructors of Reflective Teaching should be alert to this tendency and encourage a focus on divergent rather than convergent thought.

Third, a concern related to the previous recommendation involves the role of the university instructor during Reflective Teaching. An active instructor who is attuned to both the instructional approach of each designated teacher and then circulates through the classroom to assess the discourse of these groups, is able to guide small group discussions. Based on the findings of this study, instructors should
look for opportunities to encourage small groups to synthesize their ideas or think more deeply about ideas that students naturally take for granted. Further, the instructor can use examples from small group discussions during large group discussions to help students grow in their ability to analyze and focus on key educational issues and concepts.

Fourth, the standard questions of Reflective Teaching should be reconceived and possibly rendered more in the form of prompts. This recommendation is based on the observation that designated teachers tended to use the stock questions in a very mechanical manner and that the questions they posed significantly shaped the direction of small group discourse. Moreover, the standard questions supplied to designated teachers may actually perpetuate a focus on presentation since the first question asks, "What influenced your choice of the particular teaching method that you used?" Therefore the questions or prompts supplied to designated teachers should be developed to correspond closely to the purposes that the instructor has for Reflective Teaching.

Finally, in the small group discussions examined in this study, it has been noted that the vast majority of reflective discussions incorporated a cyclical structure involving turn-taking between the designated teacher and learners in which the group focused on the performance and instructional approach of the designated teacher. However, the results of this study do not provide a compelling reason to encourage one structure over another, nor is it clear how encouraging such structures might be accomplished. What did seem to be counterproductive were the cyclical discussions that ultimately reduced the discourse to a statement of accepted "fact" (e.g. "There
was just no other way to teach it"]. Therefore the findings do suggest encouraging students to focus on collaborative learning about educational phenomena.

**Recommendations**

Based on the findings of this study, the following areas of inquiry are recommended for further study:

1. Replication of this study to confirm the major findings.
2. Replication of this study should be conducted with students at different levels of preservice training or a longitudinal study to examine the maturational effects of preservice training on reflective thinking.
3. A study should be conducted to determine if sustained, systematic involvement in Reflective Teaching over time enhances the ability of preservice students to reflect on educational phenomena.
4. An experimental study in which preservice students are given training in small group discourse to determine if such training could enhance reflection in small group discussions should be conducted.
5. An experimental study should be conducted to explore possible relationships between personality variables of students and their contribution to reflect on in group discourse.
6. A study should be conducted to examine the roles that participants play in Reflective Teaching and the ways in which the university instructor could facilitate small group discussion amongst participants.
7. Research should be conducted to analyze the behavior of participants during Reflective Teaching in order to better understand the process of Reflective Teaching.

Historically, laboratory-based clinical experiences have not been widely employed in preservice teacher preparation nor have such clinical methods been adequately researched (Cruickshank, 1985). Although Reflective Teaching has enjoyed a high level of acceptance among teacher educators (Cruickshank, 1985) additional research could not only provide a greater theoretical understanding of the processes involved in RT, but such studies could also help develop new approaches to this laboratory experience.

This study provides some essential understandings regarding the discourse of students as they engage in Reflective Teaching which can be used by teacher educators to guide their use of Reflective Teaching and to inform future efforts in the research and development of this classroom strategy.
BIBLIOGRAPHY


APPENDIX A

REFLECTIVE TEACHING INDEX

CATEGORIES AND SUBCATEGORIES
Description of Discourse Categories

**Factual Discourse** expresses attempts to describe, identify, interpret and explain educational phenomena. There are four types of factual discourse with only explanatory/hypothetical discourse considered to be reflective. These four types are:

1. **Descriptive discourse** recounts the details or characteristics of observed phenomena.
   
   Examples:  
   - "I included visuals and had you write the steps down."
   - "I noticed that these problems were really hard"

2. **Informational discourse** identifies information relevant to the observation but not verifiable by direct observation of the lesson being analyzed.
   
   Examples:  
   - "It took me a long time to figure out how to arrange these categories."
   - "This exercise is a lot like one we've done in our media class."
   - "I had some trouble doing the initial fold."
   - "If I had taught it, I would probably have skipped over it - thinking Oh they can probably do that."

3. **Hermeneutic discourse** explores the meanings which underlie the words or actions of participants in educational settings.
   
   Examples:  
   - "I wondered what you intended when you were talking about quadratic equations."
   - "Toward the end you were hurrying and it seemed like you wanted us to do it faster."

4. **Explanatory/hypothetical discourse** identifies the cause-and-effect relationships that occur in educational settings.
   
   Examples:  
   - "I think that we were encouraged to participate because we depended on one another to complete the task."
   - "Your emphasis on the display helped me to visualize the whole process."
   - "Your demonstration of the folding reinforced the task."
   - "There were no words in the directions, so I didn't know what to do."

**Prudential Discourse** is characterized by suggestions or advice proffered regarding instruction and/or intended to judge the value, worth or quality of a teacher's actions. None of the four categories which follow are considered to represent reflective thought.

1. **Instruction** is a suggestion that a teacher try a particular procedure or approach without providing rationale or justification for the method.
   
   Examples:  
   - "I think you might have tried to show us something visually."
   - "Did you consider trying to get us to discuss these words?"
   - "I would have been more satisfied if you had colored paper - but that's just me."
   - "I had some trouble understanding how to do the initial fold."

2. **Advice/opinion** is a suggestion that a teacher consider two or more courses of action without providing rationale or justification for the suggested actions.
Examples:  “After doing it, I would say that if you had given us more practice and taken it at a slower pace it would have helped me.”  
“Next time why don’t you try putting the students in groups and have them do the exercises one at a time instead of altogether.”

3. **Evaluation** is a positive or negative judgment about the value, worth or quality of an action without supporting justification.

Examples:  “I think this was just too difficult to do in the time given.”
“I thought that doing this was interesting and I had fun doing it.”
“Having those steps out like that was a good model for every single step that you had.”
“You did a good job on that part.”

4. **Support** is characterized by an expression of empathy of emotive encouragement for a past, present, or future action.

Examples:  “I know how you feel because I had a tough time working on my lesson.”

**Justificatory Discourse** is characterized by the expression of reasons or rationale for past, present, and future actions. This type of discourse asks, “on what basis do I justify a particular action or decision?” There are three types of justificatory discourse distinguished by the type of rationale offered to justify observed actions. Each type of justificatory discourse is considered indicative of reflective thought.

1. **A pragmatic rationale** is offered to justify a pedagogical action based on its effectiveness or efficiency to effect an outcome.

Examples:  “Well you had to do it that way given the time you had available.”
“If you want someone to remember a list like that, you have to go over and over it.”
“For students to do exercises that you hand out - I mean the directions have to be clear and concise because I know I struggled just doing a simple thing like a butterfly.”
“I hesitated because I don’t know if its right for our family.”
“I think we should teach from our strengths because we are probably more knowledgeable about the subject.”

2. **An intrinsic rationale** is offered to justify a pedagogical action based on beliefs about universal knowledge, values or student needs.

Examples:  “Well you treated us patiently and calmly and everyone responds to being treated with respect.”
“I think it was successful because - you know- the more you use something the easier it is.”

3. **An extrinsic rationale** is offered to justify a pedagogical action based on criteria external to the present context (e.g., potential value to society).
Example:  "I liked the way you involved us in groups. I think as teachers we need to help our students learn to work together so that they will learn to get along with others and learn to value other points of view."
"I think that it is important to show students warmth and kindness because they may not have many positive strokes at home or anywhere else in their lives."

Critical Discourse assesses the adequacy of the reasons advanced in justificatory discourse. It also assesses the intrinsic values within the structure and content of curriculum materials and instructional practices. Therefore critical discourse also examines what is known as the "hidden curriculum." The four types of critical discourse correspond to the categories of justificatory discourse, pragmatic, intrinsic, and extrinsic, along with curricular and instructional practice (i.e. hidden curriculum). Critical discourse is also considered as indicative of reflective thought.

Example:  "You know, you said that the reason you presented this in a rote manner was because you didn’t have much background knowledge, but that’s a choice we often make as to whether we are going to do the study and preparation before we teach a lesson."

Example:  "But the fact that we were involved in itself doesn’t explain our enthusiasm for the project. There are other factors such as the teachers enthusiasm and interest and what we bring to the learning task."

Example:  "I question whether we should be teaching this in the way we are since this approach seems to run counter to our goal to have the students learn through discovery."
APPENDIX B

REFLECTIVE TEACHING LESSONS
THE ORIGAMI TASK

Read each section carefully

Description of your Reflective Teaching Task

You are one of several participants chosen to teach this brief lesson to a small group of your peers. The exercise is intended to provide an opportunity for you to experience teaching and then to reflect on the shared teaching and learning. Plan to teach the lesson in such a way that you believe both learning and satisfaction will result.

Your lesson will be taught on ____________

Introduction to the lesson

Teachers describe — that is, they tell about something. Teachers also demonstrate — that is, they show how to do something. The following are examples of teachers describing and demonstrating behavior:

1. A health education teacher demonstrates how to give mouth-to-mouth resuscitation.
2. A physics teacher demonstrates the phenomenon of centrifugal force.
3. A social studies teacher engages the class in a demonstration of how a bill becomes a law.
4. A home economics teacher demonstrates the proper way to bathe an infant.

Below is an objective that requires you to describe and demonstrate something to a small group of your peers. The task was selected because your success in accomplishing it probably will not be dependent on your knowledge of some academic subject or previous experience you might have had.

Your objective

Your goal is to get as many of your learners as possible to make a butterfly from paper using the technique of origami. You will have 15 minutes in which to accomplish your goal.

Materials

1. Resources: The Japanese Art of Paper Folding (attached)
2. Light-weight, square paper for folding — enough for you and your learners (provided by you)
3. Scoring Box (provided by instructor)
4. Learner satisfaction form (provided by college instructor)

Special conditions and limitations

The teacher may not touch or fold a learner’s paper. After teaching the technique, test the learners by having them each fold a butterfly without any help from you.

Ending the lesson

Notify the college instructor when your learners are ready to take the test. (You may finish early). Obtain copies of the scoring box and learner satisfaction form. Test each learner individually by having them fold a butterfly. Evaluate your learners’ butterflies using the criteria given with the scoring box.

Next, pass out the learner satisfaction forms, and while they are being completed, record the ratings of the butterflies in the scoring box. Collect the learner satisfaction forms.

Begin to work through the questions for small group discussion with your learners.

The idea for this RTL was contributed by Jerry Mager, Syracuse University, New York.
The Japanese Art of Paper Folding

The Butterfly

1. 
2. 
3. 
4. 

Turn over
THE BUTTERFLY
The Origami Learner Assessment

Use the following criteria to assess each learner’s butterfly. If they have been successful in making the butterfly without help give six points. Give one additional point for each attribute listed below (up to 10 points). Award five points if the learner is unsuccessful in making a butterfly on their own.

- Wings spread out at equal angles
- Are folds neat and crisp
- Butterfly free of crumpled panels
- Lower body parts constructed properly so that there is a symmetrical indentation on each side of the butterfly?
- Is the butterfly symmetrical - (folds symmetrical)?

<table>
<thead>
<tr>
<th>Learner’s Name</th>
<th>Rating</th>
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<tbody>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
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<td>4</td>
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</tr>
</tbody>
</table>
THE MAGIC SQUARES

Task

Read each section carefully

Description of your Reflective Teaching Task

You are one of several participants chosen to teach this brief lesson to a small group of your peers. The exercise is intended to provide an opportunity for you to experience teaching and then to reflect on the shared teaching and learning. Plan to teach the lesson in such a way that you believe both learning and satisfaction will result.

Introduction to the lesson

Teachers describe — that is, they tell about something. Teachers also demonstrate — that is, they show how to do something. The following are examples of teachers describing and demonstrating behavior.

1. An elementary teacher describes how to perform division and demonstrates by example.
2. A chemistry teacher describes how to prepare a solution and demonstrates by example.
3. An auto mechanics teacher describes how to change a tire and demonstrates by example.
4. A physical education teacher describes how to do a forward roll and demonstrates by example.

Below is an objective that requires you to describe and demonstrate something to a small group of your peers. The task was selected because your success in accomplishing it probably will not be dependent on your knowledge of some academic subject or previous experience you might have had.

Your objective

Your goal is to get as many of your learners as possible to be able to construct correctly a magic square where the number of cells on each side equals seven. You will have 15 minutes in which to accomplish your objective.

Materials

1. Resources: An Amusement for Centuries (attached)
2. Test (provided by instructor)
3. Answer sheet and scoring box (provided by instructor)
4. Learner satisfaction forms (provided by instructor)

Special conditions and limitations

None

Ending the lesson

Notify the instructor when your learners are ready to take the test. (You may finish early). Obtain copies of the test, scoring box, and learner satisfaction form.

Give your learners the test, and when they have finished (no more than five minutes), read them the correct answers so that they can correct their own tests. Use the criteria given with the scoring box for scoring.

Next, pass out the learner satisfaction forms, and while they are being completed, collect the tests and record the scores in the scoring box. Return the tests and collect the learner satisfaction forms.

Begin to work through the questions for small group discussion with your learners.

The idea for this RTL was contributed by Jerry Mager, Syracuse University, New York.
An Amusement for Centuries
A magic square is one in which the columns, rows, and diagonals all add to the same number. For example, in the square below they all add to 15.

```
15 15 15 15
8 1 6 15
3 5 7 15
4 9 2 15
15 15 15 15
```

The formation of magic squares has been an amusement for centuries. They were sometimes said to possess magical properties; one particular square was inscribed on a silver plate and carried as a protection against the plague.

Magic squares can be constructed by trial and error, but the task is very time consuming. Thanks to a rule discovered by De La Loubere in 1693, it is possible to complete odd-numbered squares with ease. There are formulas for even-numbered squares, but they will not concern us at this stage.

De La Loubere's rule may be stated as follows:

a) Place the numeral 1 in the middle cell of the top row.

b) Then proceed to place the successive numbers moving upwards diagonally to the right. However, if the top row is reached, one moves to the bottom row as if it had been above the top row. Thus 2 goes to the bottom right-hand corner.
c) If the right-hand column is reached, one moves to the left-hand column as if it had been next to the right-hand column.

```
1
3
2
```

Thus 3 goes to the middle left-hand cell.

d) If, when moving diagonally, one finds another number filling a cell, then move to the cell immediately below.

```
1
3
4
2
```

Thus 4 goes below the 3.

e) When the top right corner cell is reached, place the next number directly below.

```
1 6
3 5 7
4
2
```

Thus 7 goes below the 6.

Now the right column is reached, so the 8 goes in the top left column.

```
8 1 6
3 5 7
4 9 2
```

This reaches the top line, so the 9 goes in the middle of the bottom row.
The following summarizes the rules:

Finally: When any cell is full, go directly below where the last number was placed.

Let us now apply the rule to a 5-cell square.

All rows, columns, and diagonals add to 65.
### THE MAGIC SQUARES

#### TASK

#### ANSWER SHEET

<p>| | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>39</td>
<td>48</td>
<td>1</td>
<td>10</td>
<td>19</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>47</td>
<td>7</td>
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<td>18</td>
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<tr>
<td>46</td>
<td>6</td>
<td>8</td>
<td>17</td>
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<td>5</td>
<td>14</td>
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<td>15</td>
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<td>42</td>
<td>44</td>
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<td>21</td>
<td>23</td>
<td>32</td>
<td>41</td>
<td>43</td>
<td>3</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>31</td>
<td>40</td>
<td>49</td>
<td>2</td>
<td>11</td>
<td>20</td>
<td></td>
</tr>
</tbody>
</table>

#### SCORING BOX

**Directions**  Give each learner 1 point for each number in the correct box. A perfect test score would be 49.

<table>
<thead>
<tr>
<th>LEARNER'S NAME</th>
<th>PERFORMANCE Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

**GROUP AVERAGE SCORE**  Add learners' scores and divide by number of learners
Read each section carefully.

Description of your Reflective Teaching Task
You are one of several participants chosen to teach this brief lesson to a small group of your peers. The exercise is intended to provide an opportunity for you to experience teaching and then to reflect on the shared teaching and learning. Plan to teach the lesson in such a way that you believe both learning and satisfaction will result.

Your lesson will be taught on ____________

Introduction to the lesson
Teachers designate things — that is they denote things directly and specifically for learners. Teachers also describe things — that is they tell about something. The following are examples of teacher designating and describing behavior:
1. An elementary teacher designates the planets in the solar system and describes the topographic and atmospheric conditions of each.
2. An agriculture teacher designates the parts of a small engine and describes the functions of each part.
3. A home economics teacher designates what a calorie is and describes how the calorie count of foods is determined.

Below is an objective that requires you to designate and describe something to a small group of your peers. The task was selected because your success in accomplishing it probably will not be dependent on your knowledge of some academic subject or previous experience you might have had.

Your objective
Your goal is to get as many of your learners as possible to be able to identify correctly synonyms of 10 vocabulary words. You will have 15 minutes in which to accomplish your goal.

Materials
1. Resources: List of Words (attached)

2. Test (provided by college instructor)
3. Answer sheet and scoring box (provided by college instructor)
4. Learner satisfaction forms (provided by college instructor)

Special conditions and limitations
You will not be given a copy of the test until after you have taught your lesson.

Ending the lesson
Notify the college instructor when your learners are ready to take the test. (You may finish early.) Obtain copies of the test, answer sheet and scoring box, and learner satisfaction form.

Give your learners the test, and when they have finished (no more than three minutes), read them the correct answers so that they can correct their own tests. Use the criteria with the scoring box for scoring.

Next, pass out the learner satisfaction forms, and while they are being completed, collect the tests and record the scores in the scoring box. Return the tests and collect the learner satisfaction forms.

Begin to work through the questions for small group discussion with your learners.

The idea for this RTL was contributed by Donald R. Cruickshank, The Ohio State University, Ohio.
List of Words
1. proselyte
2. abstemious
3. perambulator
4. lachrymose
5. scabbard
6. sagacious
7. chimerical
8. sobriquet
9. jejune
10. comestible
THE MULTIPLICATION TASK

Read each section carefully

Description of your Reflective Teaching Task
You are one of several participants chosen to teach this brief lesson to a small group of your peers. The exercise is intended to provide an opportunity for you to experience teaching and then to reflect on the shared teaching and learning. Plan to teach the lesson in such a way that you believe both learning and satisfaction will result.

Your lesson will be taught on __________

Introduction to the lesson
Teachers describe — that is, they tell about something. Teachers also demonstrate — that is, they show how to do something. The following are examples of teacher describing and demonstrating behavior:
1. An English teacher describes the parts to be included in an outline and demonstrates how they are to be arranged.
2. A business teacher describes how a federal income tax table is set up and then demonstrates how to find a specific piece of information in it.
3. A football coach describes what was wrong with a play used in Saturday's game and then demonstrates on a blackboard what should have been done.
4. An art teacher describes how to plan a poster and then demonstrates alternative ways of arranging its parts.
5. A science teacher describes the external structures common to all insects and demonstrates their locations on a diagram of an insect.

Below is an objective that requires you to describe and demonstrate something to a small group of your peers. The task was selected because your success in accomplishing it probably will not be dependent on your knowledge of some academic subject or previous experience you might have had.

Your objective
Your goal is to get as many of your learners as possible to be able to multiply a matrix having two columns and three rows times a matrix having three columns and two rows. You will have 15 minutes in which to accomplish your goal.

Materials
1. Resources: Multiplication of Two Matrices (attached)
2. Test (provided by college instructor)
3. Answer sheet and scoring box (provided by college instructor)
4. Learner satisfaction form (provided by college instructor)

Special conditions and limitations
None

Ending the lesson
Notify the college instructor when your learners are ready to take the test. (You may finish early.) Obtain copies of the test, answer sheet and scoring box, and learner satisfaction form.

Give your learners the test and when they have finished (no more than five minutes), read them the correct answers so that they can correct their own tests. Use the criteria given with the scoring box for scoring.

Next, pass out the learner satisfaction forms, and while they are being completed, collect the tests and record the scores in the scoring box. Return the tests and collect the learner satisfaction forms.

Begin to work through the questions for small group discussion with your learners.

The idea for this RTL was contributed by Betty Myers, Shepherd College, West Virginia.
Multiplication of Two Matrices

A matrix is a rectangular arrangement of any number of rows of numbers and any number of columns of numbers. By custom, parentheses are used to indicate a matrix. Below are three examples of matrices.

\[
\begin{pmatrix}
1 & 2 \\
2 & 1 \\
3 & 8
\end{pmatrix}
\quad \begin{pmatrix}
8 & 5 & 4 \\
2 & 3 & 2
\end{pmatrix}
\quad \begin{pmatrix}
16 & 11 \\
10 & 9 \\
1 & 6
\end{pmatrix}
\]

Just as single numbers can be multiplied, so can matrices. Remember that there are two processes involved in getting the final product of a multiplication: multiplication and addition. Below are two matrices labeled A and B. The objective is to multiply matrix A times matrix B. In order to do this, the numbers in each row of matrix A will be multiplied one row at a time by the number in each column of matrix B, taking one column at a time. The sum of the products obtained by multiplying the first column by the first row of matrix A will be the first number of matrix C and will be placed in the upper left corner of the matrix. Matrix C is the product matrix.

\[
\begin{pmatrix}
3 & 1 \\
5 & 1 \\
2 & 4
\end{pmatrix}
\times
\begin{pmatrix}
4 & 1 & 4 \\
5 & 6 & 2
\end{pmatrix}
= \begin{pmatrix}
\end{pmatrix}
\]

Matrix A  Matrix B  Matrix C

The following steps demonstrate what to do.

1. Take the first row in matrix A and the first column in matrix B. Multiply $3 \times 4$ and $1 \times 5$ and sum. The answer is 17. Put this number in the upper left corner of Matrix C.
2. Take the second row of matrix A and first column of matrix B. Multiply $5 \times 4$ and $1 \times 5$ and sum; it equals 25. Put this number below the 17.
3. Take the third row of matrix A and the first column of matrix B. Multiply $2 \times 4$ and $4 \times 5$, sum to get 28. Put this number below the 25.
4. Take the first row of matrix A again and the second column of matrix B. Multiply $3 \times 1$ and $1 \times 6$, sum and get 9. Put this to the right of 17.
5. Take the second row of matrix A and the second column of matrix B. Multiply $5 \times 1$ and $1 \times 6 = 11$. Put this below the 9.
6. Take the third row of matrix A and the second column of matrix B. Multiply $2 \times 1$ and $4 \times 6 = ?$
7. Take the first row of matrix A and the third column of matrix B. Multiply $3 \times 4$ and $1 \times 2$.
8. Take the second row of matrix A and the third column of matrix B. Multiply $5 \times 4$ and $1 \times 2$.
9. Take the third row of matrix A and the third column of matrix B. Multiply $2 \times 4$ and $4 \times 2$. 
Check your Matrix C with that presented here.

\[
\begin{pmatrix}
3 & 1 \\
5 & 1 \\
2 & 4 \\
\end{pmatrix}
\times
\begin{pmatrix}
4 & 1 & 4 \\
5 & 6 & 2 \\
\end{pmatrix}
=
\begin{pmatrix}
17 & 9 & 14 \\
25 & 11 & 22 \\
28 & 26 & 16 \\
\end{pmatrix}
\]

Matrix A  Matrix B  Matrix C

Here are some additional exercises for practice. You could make others, too.

\[
\begin{pmatrix}
2 & 2 \\
3 & 1 \\
4 & 1 \\
\end{pmatrix}
\times
\begin{pmatrix}
3 & 2 & 1 \\
4 & 1 & 2 \\
\end{pmatrix}
=
\begin{pmatrix}
\end{pmatrix}
\]

Matrix D  Matrix E  Matrix F

\[
\begin{pmatrix}
5 & 3 \\
1 & 4 \\
1 & 3 \\
\end{pmatrix}
\times
\begin{pmatrix}
5 & 4 & 0 \\
2 & 0 & 5 \\
\end{pmatrix}
=
\begin{pmatrix}
\end{pmatrix}
\]

Matrix G  Matrix H  Matrix I

\[
\begin{pmatrix}
2 & 2 \\
3 & 4 \\
4 & 3 \\
\end{pmatrix}
\times
\begin{pmatrix}
6 & 3 & 1 \\
1 & 3 & 6 \\
\end{pmatrix}
=
\begin{pmatrix}
\end{pmatrix}
\]

Matrix J  Matrix K  Matrix L

Answers
\[
\begin{pmatrix}
12 & 12 & 12 \\
12 & 12 & 12 \\
11 & 11 & 11 \\
\end{pmatrix}
\text{Matrix I}
\]

\[
\begin{pmatrix}
11 & 11 \\
11 & 11 \\
11 & 11 \\
\end{pmatrix}
\text{Matrix I}
\]

\[
\begin{pmatrix}
9 & 6 & 16 \\
5 & 7 & 11 \\
9 & 9 & 14 \\
\end{pmatrix}
\text{Matrix F}
\]
THE MULTIPLICATION TASK

ANSWER SHEET

\[
\begin{pmatrix}
102 & 70 & 110 \\
134 & 92 & 144 \\
140 & 97 & 139 \\
\end{pmatrix}
\]

Matrix Z
THE DISCIPLINE IN ELEMENTARY CLASSROOMS

T A S K

Read each section carefully

Description of your Reflective Teaching Task
You are one of several participants chosen to teach this brief lesson to a small group of your peers. The exercise is intended to provide an opportunity for you to experience teaching and then to reflect on the shared teaching and learning. Plan to teach the lesson in such a way that you believe both learning and satisfaction will result.

Your lesson will be taught on

Introduction to the lesson
Teachers designate things — that is they denote things directly and specifically to learners. The following are examples of teacher designating behavior:
1. A government teacher tells students the major points of the Monroe Doctrine.
2. An education teacher tells students several teacher behaviors that are related to student learning and satisfaction.
3. A chemistry teacher tells students the principal characteristics of halogens.

Below is an objective that requires you to designate something to a small group of your peers. The task was selected because your success in accomplishing it probably will not be dependent on your knowledge of some academic subject or previous experience you might have had.

Your objective
Your goal is to get as many of your learners as possible to list correctly the eight teacher behaviors that seem to contribute to effective management of elementary classrooms. You will have 15 minutes in which to accomplish your goal.

Materials
1. Resources: Teacher Behaviors and Classroom Management (attached)
2. Test (attached)
3. Learner satisfaction forms (provided by college instructor)

4. Answer sheet and scoring box (attached)

Special conditions and limitations
None

Ending the lesson
Notify the college instructor when your learners are ready to take the test. (You may finish early.) Obtain copies of the test and the learner satisfaction form.

Give your learners the test, and when they have finished (no more than three minutes), read them the correct answers so that they can correct their own tests. Use the criteria with the scoring box for scoring.

Next, pass out the learner satisfaction forms, and while they are being completed, collect the tests and record the scores in the scoring box. Return the tests and collect the learner satisfaction forms.

Begin to work through the questions for small group discussion with learners.

The idea for this RTL was contributed by John Holton, Appoquinimink School District, Delaware.
Teacher Behaviors and Classroom Management

Professor Jacob Kounin and his colleagues at Wayne State University have worked on the problem of classroom discipline for over 20 years. If we think of discipline in terms of disruption — pupils not paying attention to the work at hand, talking out of turn, whispering, passing notes, for example — we might wonder what teachers who seem to have little disruption in their classrooms do, either to stop disruption or to prevent it from happening at all. Professor Kounin watched videotaped recordings of classrooms to identify those teacher behaviors that seemed related to good classroom management. The videotaped classrooms were all lower elementary grades.

There were eight behaviors that seemed consistently to be related to effective classroom management. They are listed below with a brief summary of what each means.*

1. Withitness. The teacher communicates to the pupils that he/she knows what is going on — (has eyes in the back of his/her head.) Kounin calls this the quality of “withitness.” The withit teacher picks up the first sign of disruption and directs appropriate attention toward the right pupil. In addition, the withit teacher is also good at timing his/her reaction to disruption: neither acting too quickly, nor waiting until a minor matter becomes major.

2. Overlapping. The teacher is able to deal with more than one classroom event at once in what Kounin calls an “overlapping” manner. For example, if a student approaches the teacher while the teacher is reading with a reading group, the teacher will attend both to the reading group and to the student. As another example, (a teacher working with a reading group sees two students in another part of the room fooling around. The teacher keeps her reading group reading while she goes over to the two students.)

3. Smoothness. The teacher is able to keep the lesson flowing. Kounin calls this “smoothness.” It means that the teacher does not interrupt the flow of the lesson by turning attention to irrelevant events, bursting in on students who are at work with orders, statements, and questions. Nor does a teacher leave a lesson hanging in midair — changing the topic before reaching closure, or by starting a topic, changing to another, and then returning to the first.

4. Momentum. The teacher maintains an appropriate “momentum.” (The teacher does not slow the lesson down by overemphasizing a student’s behavior, a subpoint in the lesson, or the materials of the lesson rather than the substance.) The teacher does not deal with the class in fragmented groups, nor does the teacher needlessly repeat instructions.

*More information about this important subject may be found in Jacob Kounin’s *Discipline and Group Management in Classrooms*, published by Holt in 1970.
5. Group alerting. The teacher is skilled at involving "nonreciting children in the recitation task," maintains their interest, and keeps them on their toes. (This is done, for example, by creating suspense — suspense as to who is going to recite next, asking for a show of hands before choosing a reciter, letting nonreciters know that they might also become a part of the lesson, presenting new, novel, or alluring materials during the recitation.)

6. Accountability. The teacher holds the class accountable during the lesson by, for example, asking the whole class to show their work by holding it up, (getting the whole class to recite in unison), bringing other children into the recitation, asking the students for raised hands if they are ready to recite or to demonstrate their work, and by checking the work of nonreciters by circulating around the classroom.

7. Valence and challenge arousal. The teacher tries to get pupils enthusiastic and involved in the lesson by showing zest and enthusiasm him/herself, pointing out that the activity possesses positive aspects, showing that the activity has genuine intellectual challenge.

8. Variety. Finally, the teacher makes certain that the activities involved in the lesson are genuinely different from one another.
THE DISCIPLINE IN ELEMENTARY CLASSROOMS

TASK

ANSWER SHEET

Answers may be in any order.

1. Withitness
2. Overlapping
3. Smoothness
4. Momentum
5. Group alerting
6. Accountability
7. Valence and challenge arousal
8. Variety
Begin with a score of 10 points and subtract 1 point for each wrong answer. Record the score below.

<table>
<thead>
<tr>
<th>Learner's Name</th>
<th>Rating (Circle one)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX C

LEARNER SATISFACTION FORM
LEARNER SATISFACTION
FORM
(Modified from Beeler, 1985)

Name of Designated Teacher

1. Please consider how well you, as a learner, were satisfied with today’s Reflective Teaching Lesson. In arriving at a ranking, take the following items into account:
   - classroom arrangement and use of teaching materials
   - use of creative or novel teaching ideas
   - eliciting and handling of questions from the group
   - use of teaching time according to schedule and sequence
   - helping learners to achieve the lesson objectives

Circle a number on the scale below that represents your overall level of learner satisfaction.

<table>
<thead>
<tr>
<th>10</th>
<th>9.5</th>
<th>9</th>
<th>8.5</th>
<th>8</th>
<th>7.5</th>
<th>7</th>
<th>6.5</th>
<th>6</th>
<th>5.5</th>
<th>5</th>
<th>4.5</th>
<th>4</th>
<th>3.5</th>
<th>3</th>
<th>2.5</th>
<th>2</th>
<th>1.5</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exceptionally</td>
<td>Very Well</td>
<td>Satisfied</td>
<td>Not Quite</td>
<td>Satisfied</td>
<td>Satisfied</td>
<td>Dissatisfied</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. What did your teacher do that contributed to your satisfaction?

3. What could your designated teacher have done to increase your satisfaction?
1. During the lesson how satisfied were you as a learner? In arriving at a rating, consider the teaching methods that were used and how well they met your needs.

   4  3  2  1
   Very Mostly Somewhat Very
   Satisfied Satisfied Unsatisfied Unsatisfied

2. What did your teacher do that contributed to your satisfaction?

3. What could your teacher have done to increase your satisfaction?
APPENDIX D

SMALL GROUP QUESTIONS
Discussion Questions for Small Groups

In the following questions you will find some that are designed to provoke your thinking as a designated teacher about the Reflective Teaching lesson and some that are intended to promote discussion of important events among the learners in your group. Since you do not have time to pursue all of the questions, select those that pertain to your lesson. Also keep in mind that these questions provide direction for the small group discussion and are intended as suggestions. As such a particular question may trigger an observation from one learner and related explanation from that learner, another learner or the designated teacher. Therefore every discussion participant could initiate a question or discussion of an issue through an observation or critique of any aspect of the teaching session.

Questions

What influenced your choice of the particular teaching methods that you used?

For example:
- the content;
- available materials;
- the setting (physical context and learners);
- time available; etc.

How effective was your approach?
- What contributed to its effectiveness (to the learners achievement & satisfaction)?

What actions could the designated teacher have taken to increase learning or learner satisfaction?

Were there events that surprised you?
- Were there certain aspects of the lesson that did not occur as you expected?
- What might have caused these events?

What specifically did you learn about teaching & learning through this lesson?

What problems did you encounter in either preparation or in teaching the lesson?
• What may have contributed to these problems or caused the problems to occur?

What choices did the designated teacher make in teaching?
• Were these choices appropriate and why were they?
• What underlying values may have contributed to these choices and why?
APPENDIX E

DIRECTIONS TO UNIVERSITY INSTRUCTORS
Instructions to PI Instructors:

First let me thank you for your assistance and allowing me to work with your students. I believe that this is an important area of research and I am hopeful we can each learn a bit more about the process and dynamics of Reflective Teaching.

I want to capture Reflective Teaching without any embellishments. However it is imperative, from the standpoint of the theoretical basis of my study, that I am able to capture as close to an ideal RT session as possible. Therefore I am suggesting some structures to help achieve this goal.

The following information is to help you understand the procedures of the study that concern the collection of data. I have selected four RT lessons for the study:


These were selected on the recommendation of PI instructors based on each lesson’s interest and potential to generate discussion. In addition, I am using cognitive tasks that are engaging and for which we would expect to see discrimination on the tests.

In terms of the procedure that I have established, the following points are essential:

Students should view the video on RT that was produced at Ohio State and participate in a discussion on the rationale and procedure of RT. I believe the video provides a good model for the students wherein they are shown a serious and quite professional approach to RT. It depicts students who appear eager to learn from one another and from the experience of analyzing that forming generalizations about their teaching.

My concern is that students understand the formative aspects of RT as a means to increase their understanding of educational phenomena. Possibly the most important point that can be made about Reflective Teaching is that it is an end in itself (a real act of teaching) and a means to an end (allows us to consider the teaching act and learn about teaching). In this sense RT serves to:

• Provide real examples of teaching that all participants can learn from. Students often view Reflective Teaching as artificial and in a certain respect it is. But we should emphasize that the lessons are conceived to be real learning so that real teaching can take place. Hence it is the nature of the RTLs to be about unusual topics so that it is unlikely that the learners would be familiar with the content.

• Illustrate principles of teaching and learning. This is the formative aspect of RT. It allows us to draw back from the teaching act and analyze the phenomena that surround teaching and learning.
• **Provide an opportunity to examine alternatives** to the procedures, strategies and decisions that the instructor made during their teaching session.

The essential focus of Reflective Teaching ought to be on the reflection that occurs following the teaching session. Because I am studying the small group discussion, I am asking that you emphasize and discuss with your students the need to prepare for the discussion just as they are preparing to teach. Furthermore we should emphasize that once the lesson has been taught, Reflective Teaching really begins. In addition, I am asking you to emphasize the need for each learner to recognize the importance of their role in pointing out the aspects of the RTL that were interesting to them, to share how they reacted as a learner to the instruction and to provide feedback and analysis of the lesson to the designated teacher. The small group discussion (and the large group discussion) is really what separates RT from other peer teaching approaches.

Organization of Reflective Teaching Sessions:

1. Reflective Teaching will occur on Monday, January 23 in Arps 274.

2. Time _____________________  (I am suggesting five RTL's)

3. I will set up a schedule for the RT session including:
   - assigning RTLs to designated teachers
   - assigning learners to designated teachers
   - structuring the time schedule

4. I will provide each designated teacher:
   - their RTL
   - learner satisfaction forms
   - copies of tests
   - a list of questions/areas for reflection to replace the questions in the Reflective Teaching manual
   - a schedule with their responsibilities highlighted

5. Each group will be videotaped throughout their teaching and small group reflection. A set of chairs will be set up in the room so that the students can move there for large group reflection. Granted this movement will take time but I am suggesting this since they will be moving to different locations throughout the class period.

   Thank you again for all your help!!
APPENDIX F

REFLECTIVE TEACHING INSTRUCTION RATING FORM
Reflective Teaching Instruction Rating Form

Instructions: Rate the designated teacher on the following behaviors.

Logical Organization of Content and Lesson:

<table>
<thead>
<tr>
<th>Clarity Behavior</th>
<th>Clearly states and emphasizes lesson objectives</th>
<th>Clearly states lesson objectives</th>
<th>Lesson objectives may be inferred from other introductory statements</th>
<th>Lesson objectives became clear in the course of the lesson</th>
<th>Lesson objectives seem unclear throughout lesson</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informs students of lesson objectives in advance of instruction</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Presents content in a logical manner</td>
<td>Strong logical structure with each idea leading to the next</td>
<td>Obvious logical structure - 1 idea not well developed</td>
<td>Some evidence of logical structure - 2 or more ideas not well developed</td>
<td>Instruction is logically fragmented and frequently moves off subject</td>
<td>Instructor appears confused about the development of concepts</td>
</tr>
<tr>
<td>Presents content in a logical manner</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Emphasis of Important Aspects of Content and Instruction:

<table>
<thead>
<tr>
<th>Clarity Behavior</th>
<th>Frequently emphasizes important aspects of content &amp; helps students understand imp.</th>
<th>Frequently emphasizes important aspects of content but not always clear why important</th>
<th>Occasionally emphasizes important aspects of content</th>
<th>Seldom emphasizes important aspects of content</th>
<th>Does not emphasize important aspects of content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Points out what is important for students to learn</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Summarizes material after each major idea or section of the lesson</td>
<td>Summarizes material of major ideas of the lesson several times</td>
<td>Summarizes at the end and somewhere in the body of the lesson</td>
<td>Summarizes only at the end of the lesson</td>
<td>Does not summarize the material presented</td>
<td></td>
</tr>
<tr>
<td>Summarizes material presented</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Explanation and Demonstration of the Concepts or Skills Presented:

<table>
<thead>
<tr>
<th>Clarity Behavior</th>
<th>Instructor uses multiple examples that are meaningful and relevant</th>
<th>Instructor frequently uses examples but misses some opportunities</th>
<th>Instructor uses some examples but misses many opportunities</th>
<th>Instructor seldom uses examples</th>
<th>Instructor does not use examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructor Uses Examples</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Works examples and explains them</td>
<td>The instructor works examples and gives step-by-step explain.</td>
<td>The Instructor works examples with general explanation</td>
<td>Instructor works examples</td>
<td>Instructor has student's work examples without explanation</td>
<td>Instructor does provide examples for students</td>
</tr>
<tr>
<td>Works examples and explains them</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Provides for Student Understanding and Assimilation of Instructional Content:

<table>
<thead>
<tr>
<th>Clarity Behavior</th>
<th>Frequently asks specific questions to determine understanding</th>
<th>Asks specific questions (at end of lesson) to determine understanding</th>
<th>Frequently asks general* questions to determine understanding</th>
<th>Asks general questions (at end of lesson) to determine understanding</th>
<th>Does not ask questions to determine understanding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asks Questions to find out if students understand</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Provides opportunities for students to practice</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

* general - "Is that clear"

Rating of Enthusiasm:

<table>
<thead>
<tr>
<th>Teacher demonstrates enthusiasm in instruction</th>
<th>Teacher highly enthusiastic shows genuine interest in lesson and in causing students to learn - students become enthused</th>
<th>Teacher is highly enthusiastic about the lesson content - students seem interested</th>
<th>Teacher seems interested but not animated in presentation</th>
<th>Teacher approaches the task in a routine or mechanical manner</th>
<th>Teacher appears disinterested, ambivalent or not emotionally involved</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Rating of Creativity:

<table>
<thead>
<tr>
<th>Teacher demonstrates creativity in instruction</th>
<th>Lesson shows imaginative thought in planning through use of visuals or an engaging or novel approach - appears to be original</th>
<th>Lesson shows imaginative thought in planning through use of visuals or an engaging or novel approach but not carried throughout lesson</th>
<th>Lesson shows little creativity - possibly use of some visual</th>
<th>Lesson presentation is routine</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
APPENDIX G

REFLECTIVE TEACHING INSTRUCTION
RATING FORM
Reflective Teaching Small Group Discussion
Rating Form

Instructions: Rate the designated teacher on the following behaviors.

Preparation for the Small Group Discussion:

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Written plan and specific questions about the lesson</th>
<th>No written plan but asked their own specific questions</th>
<th>No written plan - questions tended to be of a general nature</th>
<th>No written plan - read questions from manual</th>
<th>No written plan - initiated discussion but didn’t guide the discussion with questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>The designated teacher was prepared to lead the group discussion</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Directiveness of the Small Group Discussion:

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Focused group on reflection, maintains clear focus</th>
<th>Focused group on reflection, focus generally clear</th>
<th>Focused group on reflection, focus drifted</th>
<th>Focus not in reflection, focus generally clear</th>
<th>Focus not in reflection, focus drifted</th>
</tr>
</thead>
<tbody>
<tr>
<td>To what extent did the teacher demonstrate leadership</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Introduced session relating to the purposes of RT</td>
<td>Introduced the discussion session established purpose/direction of the discussion</td>
<td>Introduced the discussion session but without clear purpose</td>
<td>Transitioned to discussion but without introductory remarks</td>
<td>Did not transition - simply began asking questions or talking about the lesson</td>
<td></td>
</tr>
<tr>
<td>To what extent did the designated teacher prepare the group for discussion</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

* Reflection refers to the categories of explanation, justification, and critique.
Also any analysis of the lesson or consideration of the learners perspective is considered reflective.

Questioning Behaviors:

<table>
<thead>
<tr>
<th>Behavior</th>
<th>All learners participated to an equal degree</th>
<th>All learners participated but to an unequal degree</th>
<th>Most learners participated</th>
<th>One student to dominate discussion</th>
<th>Designated teacher monopolized the discussion</th>
</tr>
</thead>
<tbody>
<tr>
<td>To what extent were the learners involved in the discussion?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Questions were higher order (90-100%)</td>
<td>Questions were higher order &gt;75%</td>
<td>Questions were higher order &gt;50%</td>
<td>Questions were higher order &gt;25%</td>
<td>Questions were not higher order</td>
<td></td>
</tr>
<tr>
<td>What was the nature of the questions asked</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
APPENDIX H

REFLECTIVE TEACHING INDEX
TRANSCRIPT RATING FORM
Small Group Discourse Rating Form

Small Group Code: _______________  Rater: ____________________________

Directions: For each thought unit in the transcript, record the number of the thought unit in the box at the top of the column. If you need to insert a thought unit, use the letter "a", "b" etc. (e.g. to insert a thought unit after the fifth thought unit use "5a"). Record your rating for each thought unit. If the statement is made by a teacher place a 'T' in one of the boxes to the right of the category designation, and if the statement is made by a learner, place an 'S1', 'S2 etc.' in the box to designate the individual student. Tally the totals in the appropriate boxes.

<table>
<thead>
<tr>
<th>Factual Discourse</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Descriptive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Informational</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hermeneutic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explanatory</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Prudential Discourse</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Instruction</td>
<td></td>
</tr>
<tr>
<td>Advice/Opinion</td>
<td></td>
</tr>
<tr>
<td>Evaluation</td>
<td></td>
</tr>
<tr>
<td>Support</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Justificatory Discourse</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pragmatic Rationale</td>
<td></td>
</tr>
<tr>
<td>Intrinsic Rationale</td>
<td></td>
</tr>
<tr>
<td>Extrinsic Rationale</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Critical Discourse</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Value of Pragmatic Rationale</td>
<td></td>
</tr>
<tr>
<td>Value of Intrinsic Rationale</td>
<td></td>
</tr>
<tr>
<td>Value of Extrinsic Rationale</td>
<td></td>
</tr>
<tr>
<td>Value of Curriculum &amp; Instruction</td>
<td></td>
</tr>
<tr>
<td>Auditory Context</td>
<td></td>
</tr>
<tr>
<td>Visual Context</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Students' Totals</th>
<th>Teacher Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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