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A study of the use of dialogue journals in an introductory course in preservice teacher education for the purpose of assessing and promoting cognitive development

Packard, Myrna Hazel, Ph.D.

The Ohio State University, 1992

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A STUDY OF
THE USE OF DIALOGUE JOURNALS
IN AN INTRODUCTORY COURSE
IN PRESERVICE TEACHER EDUCATION
FOR THE PURPOSE OF ASSESSING AND PROMOTING
COGNITIVE DEVELOPMENT

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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DEDICATION

This work is dedicated to my older daughter, Molly Packard Wilson, who has served as a model, an informant, and a friend during my exploration of issues of cognitive structures and styles in undergraduate students. The completed document is the gift I offer her on her graduation from Mount Holyoke College, May 24, 1992.
ACKNOWLEDGEMENTS

I wish to acknowledge the supports and challenges of those involved in this study. Dr. Kenneth Howey challenged me to grow in scholarship, Dr. Robert Rodgers supported me with his guidance in the process of doing research, Dr. Kenneth Marantz, as always, used both support and challenge to urge me to completion of this project.

The two communities who sustained me with their support were Barrington School students, staff and faculty and the First Unitarian Universalist Church. I am especially grateful to Dr. Ted Oakly and Mark Carter for their friendships at school and to the members of the choir and Frank Rivas at church.

My younger daughter, Samantha Lee Wilson, was always there supporting me when I faltered. My dad, Marion Packard, challenged me to "get the darned thing done."

I thank those at the Arps Library who supported with a friendly greeting and helpful manner; the men and women who supported and challenged me during course work, especially Judith Green, Patti Lather, Gail McCutcheon, Bob Bargar, and Richard Pratte; the TA's with whom I taught Professional Introduction to Education; my typists, Carol Conroy and Lee Zarate; my statistician, Bob Rice, and the nine students who were participants in the second pilot study: Beth, Tracy, Amy, Heather, Julie, Lisa, Scott, Tom, and Mick.
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Aesthetic Responses of Some Second Graders to the Picturebook as Art Object, unpublished thesis, Department of Art Education, The Ohio State University, Columbus, Ohio, 1984.

Fields of Study

Major Field: Education

Studies in: Art Education

Preservice Teacher Education

Qualitative Research Methodology

Adult Development

English
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CHAPTER I

Introduction to the Study

The Problem

National concern about the quality of education has prompted numerous efforts to improve teacher education. Pertinent to this study was one of the goals of the Holmes Group (Tomorrow’s Teachers, A Report of The Holmes Group, 1986) "to make the education of teachers intellectually more solid" by which this group meant "teachers must have a greater command of academic subjects, and of the skills to teach them. They also need to become more thoughtful students of teaching [emphasis added], and its improvement (p. 4). This study explores how this latter goal can be enhanced through the use of journals which are designed to allow a sustained dialogue between the researcher and preservice teachers.

The Significance of the Problem

Crucial to such thoughtfulness in teachers is the development of skills to think about their own thinking, a concept generally referred to as meta-cognition. Understandings and strategies associated with cognition and meta-cognition are often included in the curriculum and cognition and meta-cognition are often included in the curriculum and
instruction of preservice teachers, but have commonly been introduced to the preservice teachers in terms of enabling their pupil's learning rather than their own. For example, texts in educational psychology introduce the theories of Piaget as a means of identifying cognitive levels so that the preservice teacher can have a clearer understanding of the students he or she will be observing and working with during field experiences. The goal is to develop the abilities of preservice teachers to use cognitive developmental theories in assessing students' curricular and instructional needs.

A corollary and equally important goal for teacher education programs from the perspective of this researcher should be to promote cognitive development and monitoring of the thinking and decision making in the preservice teachers. Making informed decisions involves reflecting both on the teaching and learning episodes and various theoretical perspectives that might help meet the needs of their students. The many choices teachers make are grounded in both research and theories the teacher has internalized and in the context of the individual classroom with specific students. Without the capacity for complex cognitive functioning, neophyte teachers may use simplistic common sense (Gardner, 1991) or hunt for the single 'right' theory to guide their practice. Studies underscore the need for both cognitive and meta-cognitive development, since preservice teachers tend not to think about their own thinking or how they learn (Feiman-Nemser, McDiarmid, Melnick and Parker, 1989). Nor have many preservice teachers reached Perry's multiplicity level of cognitive development (Phillips,
1983), viewed by some as a prerequisite to teaching in a complex, conceptual manner.

The Purpose of the Study

Therefore, this study was concerned with how to promote cognitive development in preservice teachers using the dialogue journal as an instructional strategy in a classroom setting. For the purposes of this study a dialogue journal is a written conversation between two people, in this case between the researcher and each of twenty-four students, as part of a college classroom experience. In this way the researcher became part of the instructional team responsible for the course. The instructional team consisted of a senior faculty member, Dr. Kenneth Marantz, and a teaching assistant, Ms. Cheryl Williams. The researcher was introduced to the students by the senior member of the instructional team as both a master teacher in art education and researcher who had been the teaching assistant with the senior faculty member for the course in 1988-1989.

A basic premise undergirding this study was that student journals can help: (a) students process their experiences in the course; (b) be a source of data for assessing a student's cognitive style and cognitive structural level of thinking; and (c) can be a stimulus to foster cognitive complexity. A review of the literature on the use of journals in preservice teacher education programs revealed little use of journals in preservice teacher education courses prior to student teaching. Only one example was found of the student journal as the major source of data and that research excluded the comments of the teachers (Bolin, 1988 and 1990).
The research questions which shaped this study were:

(1) Will an introductory course in preservice teacher education which included dialogue journals employed over nine weeks containing scenarios and prompts designed to promote cognitive development result in increased cognitive development in preservice students?

(2) Can dialogue journals also be used to assess the cognitive structure and style of students?

The Design of the Study

This study is a one group pre-test/post-test design (Campbell and Stanley, 1963). In the study there were two pre-tests and post-tests and the MiD had two formats, one for pre-test and one for post-test. The dialogue journals were the treatment. The design procedure is shown below:

<table>
<thead>
<tr>
<th>Pre-tests</th>
<th>Treatment</th>
<th>Post-tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1A</td>
<td>X</td>
<td>T2AA</td>
</tr>
<tr>
<td>T1B</td>
<td></td>
<td>T2B</td>
</tr>
</tbody>
</table>

Conceptual Framework

The study is based on Perry's scheme for intellectual development (Perry, 1970) and on Women's Ways of Knowing: Development of Self, Voice and Mind (Belenky, Clinchy, Goldberger, and Tarule, 1986). Perry's scheme describes cognitive development through a sequential series of increasingly complex processes. In this sequence, the less
complex positions are called dualistic thinking (Positions 1, 2, and 3) followed by multiplicitic thinking (Position 4) leading to relativistic thinking (Position 5). Most undergraduates enter colleges and universities at a dualistic level (Position 2) which is exemplified by a belief in absolute right and wrong answers to questions of knowledge (Perry, 1970, pp. 55-56). The right answers are held by authorities who pass them on to the student. As students progress through dualism, they recognize that authorities may not know all the answers but it is only a matter of time until they will (Position 3). In the meantime students can learn the right process for searching for the answers. When a student moves beyond beliefs in absolutes, she or he moves into a position of multiplicity and believes "anyone's view of reality is as legitimate as anyone else's" (Position 4). This leads to a shift away from "thinking about what they [the authority] want" to "thinking about the way they want you to think" (p. 100). It is at this point that students are in a good position to think about their own thinking or experience meta-cognition. The next position, relativism (Position 5) is exemplified by an acceptance of the contextual influence on knowledge and the need to support one's view of the non-absolute reality of a situation. Positions 6 through 9 involve stages of commitment to a view of one's own identity and reality.

Development is not automatic. Progress appears to depend upon repeated encounters with cognitively appropriate challenges coupled with adequate support. This study investigated whether a dialogue journal can provide such an environment of challenge and support. A more complete description of the Perry Scheme and the conditions needed to
facilitate change will be provided in the review of literature and in the chapter on methodology.

Women's Ways of Knowing (1986) describes a variety of developmental categories that are structurally similar to Perry's scheme (1970); however, they show marked differences in style from those reported by the men studied by Perry and his associates (Rodgers, 1990 and Baxter Magolda, 1987, 1988a, 1988b, 1989). Perry's study focused on undergraduates at Harvard and was limited to male students. The research team studying women's ways (Belenky, Clinchy, Goldberger, and Tarule, p. 8) refers to studies (Gilligan and Lyons, 1983, Chodorow, 1978, and Miller, 1976) which found self-identification rooted in connection (predominantly female) or separation (predominantly male). These differences influenced moral judgments along gender lines but were not specific to gender. Belenky, Clinchy, Goldberger, and Tarule pointed out that "separate and connected knowing are not gender-specific" though "[t]he two modes may be gender-related" (Belenky, Clinchy, Goldberger, and Tarule, p. 102). Hence, it seems appropriate to examine individual students' stylistic differences in cognitive functioning if one is attempting to facilitate the cognitive development of both genders.

The five categories of Ways of Knowing [the term used by the researchers] theory include:

(a) Silence which is similar to the first stage of dualism,
(b) Received Knowledge that corresponds to Perry's Position 2,
(c) Subjective Knowledge which has attributes similar to the multinlistic characteristics of Perry's Position 4,
(d) Procedural Knowledge relating to the early stages of relativism in Position 5, and

These scholars identified separate and connected knowing as divergent styles of gaining information objectively and in a manner that will meet approval by the authorities. These ways are exemplified (1) by separating from self and focusing on the object of study, using critical investigation, i.e., debate, to gain knowledge or (2) by connecting self and knowledge and using empathic discussion to uncover the logic of another as a means of gaining knowledge (Belenky, Clinchy, Goldberger, and Tarule, pp. 100-103). It appears that these two different styles of gaining information are preferences that exist in each of the cognitive positions, not just at Position 4 (Perry) or Procedural Knowledge (Magolda, 1991). For a more extensive description of this theory see the chapter on review of the literature and the chapter on methodology.

Instrumentation and Instrumentation Development

In this study, the dialogue journal is a means to facilitate cognitive development using both the Perry Scheme and the Ways of Knowing typologies to stimulate student comments and to respond to their thinking in a sustained written dialogue between the students and the researcher/instructor. The development of cognitive structure is based in the use of support and challenge through responding to an individual student at their level of cognitive structure (Perry's Positions 2-5) or
at a level that is one stage or more above the student's levels. Cognitive style can be characterized as a preference for connected or separate knowing and the researcher attempted to match the student's preferred style by analyzing the student's responses. Pertinent to this study, a 1982 study in the College of Education at the Ohio State University revealed that most students entered the college at stages 1(2) and 2 and graduated at stage 3 (Phillips, p. 90). Thus education students grew one to one and a half stages during the four year period but a few students achieved stages 4 or 5.

In terms of Perry's theory: Widick, Knefelkamp, and Parker's (1975) criteria for facilitating cognitive development on the Perry scheme were used in implementing the journals. In terms of Women's Ways of Knowing (1986), the authors' distinctions between connected and separate knowing was also used in implementing the journals. Since there is no instrument to rate cognitive style based on connected and separate knowing, logical criteria were pulled from the Women's Ways of Knowing text.

Belenky, Clinchy, Goldberger, and Tarule identified attributes of separate knowing or connected knowing that emerged out of the data. These attributes were identified at the stage referred to as Procedural Knowledge (comparable to Perry's position 4). In some cases, there were pairs of attributes. This researcher added an attribute to create pairs when none existed as a tool to clarify differences in cognitive style. In this way, the ratings have face validity. The attributes are discussed in detail in Chapter Two and the extensive list of parallel attributes is presented in Chapter Three.
To elaborate briefly on the intervention based on the Perry scheme, Widick, Knefelkamp, and Parker (1975) described the role of a "developmental instructor" who desires to design and implement a "curricular intervention" that fosters development of students at both dualistic and relativistic positions (pp. 286 and 289-293). The studies report "upward movement" among freshmen enrolled in two courses from stages 3 and 4 to stages 4 and 5 using Knefelkamp and Widick's criteria for challenge and support to redesign instruction. It is also important to note that one form of interaction between the developmental instructor and the students was "extensive dialogue carried out through written reactions to the students' logs" (p. 293). The instructional approaches for the dualistic and relativistic students are discussed in Chapter Two.

Four scenarios were designed to stimulate in-depth dialogue between the students and the researcher over a nine week period. The scenarios focused on the following: (a) student's experience of a course that was unsatisfactory, (b) feelings and thoughts about the content of an art course he or she had taken in the past, (c) an imaginary assignment to write an art review for her or his hometown newspaper, and (d) a career in the art education field other than an art teacher in a public school. These scenarios were topics related to the course content. They allowed the researcher/instructor to dialogue with the students in an exploration of the students' assumptions and an introduction of increased complexity, as defined by the Perry scheme (1970). Furthermore, the scenarios made explicit the students' criteria for making decisions, and provided opportunity for a consideration of
what it means to make a commitment. In these ways the scenarios resembled the content designed by Widick, Knefelkamp and Parker (1975).

The prompts were designed to elicit students' views of authority, of the nature of learners (both self and peers), of proper evaluation, as well as the students' views of knowledge. The researcher attempted to assess the individual student's cognitive structure and structural change, if any, adapting the prompts to match cognitive structure (support) or move ahead one position in the scheme of cognitive structure (challenge). An example of challenge would be to confront a student's idea at Position 4 (since there is no single truth my ideas are as good as the authority's ideas) by asking for a context (the relativism of Position 5) in which the idea would be useful and another context where the idea wouldn't work. The researcher assessed the dialogues in terms of cognitive style and attempted to match the style as a means of enhancing cognitive structural change.

To sum up, scenarios were the initial situations the students were invited to respond to and prompts were the comments or questions that continued the dialogues. During the first four weeks, students responded to each new scenario while simultaneously responding to questions and comments that continued dialogues from previous prompts. The researcher/instructor initiated the dialogue process on one of the four scenarios each week. Following the initial response to the scenarios the researcher/instructor prompted the students with questions and comments. Starting with the fifth week of the term, dialogues over all four prompts were conducted simultaneously and were sustained throughout the rest of the term.
Prior to the initiation of the journal process, students completed the Measure of Intellectual Development (Knefelkamp, Widick and Slepitz, 1978) (hereafter MID) and the Ethical Reasoning Inventory (Boda and Page, 1980) (hereafter ERI) as pre-tests of cognitive developmental level. The MID consists of prompts to which students respond. The pre-test prompt for this study asked the student to describe best course taken in high school or college and give reasons why it was so positive. At the completion of the term, students completed the post-test version of the MID and repeated filling out the ERI as post-tests. The MID post-test prompt for this study asked the student to describe an ideal course and give reasons why it was ideal.

The students' responses were rated by certified raters (Dr. William Moore and his associate) using criteria for the respondents' views of knowledge, authority and learner based on the Perry scheme. The results of the pre-test and post-test were neither known nor used by the researcher in analyzing the cognitive structure of the students during the writing of the journals. In this way, assessment of the students' cognitive structure for intervention purposes was confined to the journals and an evaluation also could be made of whether the journals could be used as a diagnostic device as well as an instructional strategy.

At the completion of the journal writing, cognitive structural change was assessed using the journal entries to rate the students' cognitive positions during the course. These ratings were done by Dr. Robert Rodgers, a certified rater, using the MID criteria. During this same period of time, the researcher was analyzing the student entries.
and rating them for cognitive style, using the list of attributes based on the characteristics found in Women's Ways of Knowing (1986). Differences from the characteristics and additional characteristics for separate and connected style were noted particularly due to the inclusion of men in the study. Simultaneously, the MID pre-tests and post-tests were scored by two certified raters, Dr. William Moore and his associate, at the Center for the Study of Intellectual Development and sent to the researcher. These results were not read by the researcher and Dr. Rodgers until after the journal data was rated.

The ERI pre-tests and post-tests were scored by the researcher after the journal data were analyzed. The ERI is a self-scoring measurement that does not require a qualified rater; the researcher chose to score the measurement believing circumstances of the task might result in resistance on the part of the students for completing the measurement. The circumstances of the completion of the ERI pre-test and post-test were for students to check off choices on the forty-six page instrument outside of class time. While this process takes less than an hour, the additional task of self-scoring could involve more than an hour, overall.

Sample

The sample for this study was comprised of twenty-four undergraduate students enrolled in Art Education 225: Introduction to Art Education, in the College of the Arts, The Ohio State University. Furthermore, the researcher was familiar with the course, having taught it with Dr. Marantz in 1988-89. The first of two pilot studies on the
use of the dialogue journal occurred during that team-teaching experience. The researcher also knew Ms. Williams through shared graduate school experiences. The primary focus was on the dialogue journal writing. However, additional events were noted during observations of the class and during the workshop facilitated by the researcher when students made the blank books that were used for journals.

The setting for the data collection of student writing and observations were in the classroom. Generally, the researcher's responses to the journals were written in her office. The primary process under study was the interactions between the researcher and individual students through written dialogues in the journals. Other processes included completion of the pre-tests and post-tests, verbal interactions, and observations of relationships between and among students, relationships between the teaching staff, and relationships between the teachers and students.

The Limitations of the Study

There was only one section of the course from which the data was collected; therefore, it was not possible to have a control group and an experimental group. For this reason, the study is described as quasi-experimental. However, the researcher arranged to collect MID pre-tests and post-tests from students in the course with the same teaching team during the next quarter. The results of these data will be used in a follow-up study.
Due to financial limitations, the rating of the journal data for cognitive structural change was done by only one rater. In future studies, the researcher recommends the use of two raters in order to determine inter-rater reliability.

The characteristic limitations of quasi-experimental research are discussed in Chapter Three including: (a) influence of factors outside the classroom; (b) students' natural maturation; (c) influence of the various tests; and (d) the influence of the styles of the teaching team, Dr. Kenneth Marantz and Ms. Cheryl Williams. The influence of the teaching team will be discussed in Chapter Five based on observations from field notes taken during the quarter and the researcher's previous experience in teaching the course.

Definitions

Dialogue journals are a written conversation between two people.

Researcher and researcher/instructor are terms used interchangeably to refer to the author of the study who was actively involved in research and instructing students through the use of dialogue journals designed to study an instructional strategy.

Preservice teachers are students in an undergraduate program in teacher education who are preparing themselves for certification.

Meta-cognition is a complex process for awareness of how one is thinking.

Cognition is the structural and behavioral process for making meaning and gaining knowledge. It is structural in one's view of knowledge and behavioral in one's view of authorities and one's self.
Cognitive structure is the view of knowledge that an individual has at various stages of development. The stages of cognitive structure are characterized by increasing complexity and the ability to view knowledge within different contexts. The terms stages, levels, and positions are used interchangeably.

Cognitive style is the preference one has for objectively gaining knowledge. Attributes or characteristics of the individual identify the preference.

Separate knowing is a cognitive style that is characterized by gaining knowledge objectively and in a manner that will meet with approval by an authority through distancing one's self from an object (usually a person) in order to study the object through critical investigation.

Connected knowing is a style of gaining knowledge objectively that will meet with approval by an authority through empathic interaction with the object (usually a person) using the logic of the other as the means.

Scenarios are situations that introduced the students to a series of written interactions in the dialogue journals based on the scenarios but evolving from the dialogue.

Responses are the writings in the dialogue journals by the students usually stemming from the scenarios or prompts. In some cases, responses may have been made to some other experience of the students.

Prompts are the writings in the dialogue journals by the researcher/instructor usually stemming from the scenarios or responses.

Support is the strategy used to nurture the student in order to promote cognitive change. Generally, support involves strategies reflecting the developmental level of the student(s). For example, the researcher used
clear directions for the ways a student could respond through words like "list" or "you do not need to write in complete sentences."

**Challenge** is the strategy used to confront the student in order to promote cognitive change. Generally, challenge involves strategies reflecting a developmental level one or more stages above the student(s) although there can be limits above which the student is unable to be affected.

**The Remaining Chapters of the Study**

Chapter Two includes a review of selected literature on cognitive structural development and cognitive style as well as the use of journals as an instructional strategy in higher education. The section on cognitive structural development and cognitive style includes studies by Perry and Belenky, Clinchy, Goldberger, and Tarule, as well as articles that extend these studies. Examples of the use of cognitive development to design instruction in higher education are reviewed and studies specific to the field of preservice teacher education are examined also. The literature on the use of various forms of journals in higher education is followed by a review of the use of journals in preservice teacher education. The two pilot studies for this study are reported on as well.

Chapter Three lays out the methodology and provides information on the measures employed including the MID, ERI, the rating system for cognitive structure based on the journal data, and the rating system for cognitive style based on the journal data. The scenarios and a schedule for data collection are included in this chapter.
Chapter Four presents the results of the pre-tests and post-tests, delineates the ratings of the dialogue journals for change in cognitive developmental positions and correlation with MID levels. The ratings of the dialogue journals for cognitive style are presented with examples of characteristics used to determine the rating. Appropriate statistical analyses of the various measurements are included. The analysis of all data is conveyed in tables and narrative form.

Chapter Five contains discussion of the results, dialogues with the literature, recommendations for future studies, and hypotheses generated from this study. The role of the master teacher as the initiator and co-author of dialogue journals with students in introductory preservice teacher education course is discussed as well.
CHAPTER II

Review of the Literature

Introduction

The literature reviewed for this study is organized into three areas. The first area is the Perry scheme (1970) of cognitive development. The literature reviewed in this area includes the theory itself and studies of the application of the Perry scheme in higher education including teacher education. These studies are both descriptive and experimental.

The second area reviewed is *Women's Ways of Knowing* (1986), a cognitive structural theory that closely resembles the Perry scheme. Emphasis is given to cognitive styles described as connected knowers or separate knowers and includes studies of the application of connected and separate learning in higher education.

The third area reviewed is the use of journals in higher education including teacher education. These studies reveal that journals are used for multiple purposes, including improving specific skills, personal learning style, higher order thinking, and as research tools. The pilot studies for this study also are included in this section.
Cognitive Structural Development

The Perry Scheme

The Perry scheme (1970) has become one of the most used models for designing undergraduate level instruction that attempts to facilitate cognitive development. The research upon which the theory is based was completed by the staff at the Bureau of Study Council at Harvard University over a 15 year period ending in 1968. It was conducted with mostly male students at Harvard/Radcliffe. Perry and his associates followed three different classes of first year students, interviewing them once a year during their four years in college. The initial interest of the researchers was to "explore and portray differences in the ways students responded to the diversity and relativistic thinking confronting them in college" (1968, p. 91). In the first class studied, a checklist was administered in order to identify two extremes—"those who entered with the most pronounced aversion to, or ignorance of, relativistic thinking, and on the other hand those who brought with them a predisposition toward, or familiarity with, such thinking" (p. 91). Later, using analysis of their interviews to describe an apparent sequential development in the first group of informants, the subsequent samples were student volunteers representing a variety of backgrounds in father's occupation, level of family income, educational background, and religious affiliation.

At this point, a decision was made to drop the Radcliffe students from the study, resulting in an all male population. In addition, the check list was dropped in the second and third samples in favor of only
the open-ended interview about how the students made meaning of their college experience each year using the general stimulus, "What stands out for you this year?" These interviews were analyzed for patterns of meaning making, and a scheme of nine positions resulted. Each stage or position is characterized by six elements: View of Knowledge, View of Role of Authorities/Teachers, View of Role of Self as a Learner, View of Role of Peers in Learning, Proper Evaluation, and Cognitive Skills. The View of Knowledge is the structural element in each stage. The other categories are behavioral correlates in the environment of education. In this review of the stages, the view of knowledge, role of authorities, role of self as learner, role of peers, appropriate evaluation, and cognitive skills will be described for positions 1 through 5. Cognitive skills include skills persons are developing at their present developmental level and those they have acquired at previous level(s). Positions 6 through 9 involve varying degrees of commitment that result in self identity using the cognitive structure of position 5. For a complete description, see Perry (1970) and the MID rating manual (Knefelkamp, Fitch, Taylor, and Moore, 1982).

Position 1: Basic Duality

At this stage of development, the view of knowledge is limited to absolute right and wrong answers. There is one Truth and this Truth is acquired by listening to and watching authorities without evaluating, and then acting on that Truth. Authorities know what is right, tell one what is right, and expect one to act on that Truth. Authorities do not need to explain why and they are infallible. The learner listens, and
does what the authority says. The world therefore is divided into the
good people who believe and act on the Truth and bad people who are
wrong. Peers are those who believe in the Truth. Others are those who
are wrong and are dismissed. As a learner, the person at the Basic
Duality position believes that a fair evaluation is based on how well he
or she acts on the instruction of the authority, how well information
has been memorized and repeated back in a test situation. Persons at
this stage have limited cognitive skills and cannot do abstract
conceptualization. They learn by memorizing and through concrete
experiences, depending on the authority for the information and
experiences necessary to know the Truth. Perry points out that this is
a somewhat idealized description and a person at this level probably
would not be in college or concerned with cognitive development (Perry,
p. 60).

Position 2: Multiplicity Pre-legitimate

At the second position in Perry's scheme, the view of knowledge
remains absolutely right or wrong but the person at this stage is aware
of apparent diversity of opinions on some questions of knowledge. This
perceived diversity is an illusion caused by poor authority figures.
Good authorities have the Truth and bad authorities give wrong
information. Knowledge is acquired from the good authority and not
constructed by the student. This knowledge is factual and collectable.
If opinions are given, they do not count as knowledge. Hence,
authorities are either right and give the Truth or wrong and therefore
not real authorities. To Perry's male students, authorities are part of
'our community.' These learners listen and receive knowledge and act on that knowledge by reiterating it in the classroom and in less formal dialogues. Students at position 2 are given fair evaluation if they are acknowledged by the authority for their ability to respond accurately with acquired knowledge in tests, in classroom recitation, and even in less formal settings. Peers include both those who are learning the Truth from 'good authorities' and others. Peers do not have Truth, however. Only authorities do. While cognitive skills at this level are very similar to those at the basic duality stage, position 2 students see that diverse opinions exist. They are learning to compare and contrast, use the special language of a field, use evidence, and do basic tasks of analysis.

Students' opposition to a 'bad authority' is based on a sense of weakness in that authority who is mistaken or wrong. The oppositional student may be strengthened by groups of students who are for (others) or against (peers) what these authorities have to say or how they say it. This opposition includes deriding an authority who is ambiguous, unclear in directions, and unpredictable in the structure of lectures, tests, and the overall schedule for the course. Students who adapt to the perception of diversity by opposition do so as a personal stance noting that a majority of students in the peer community accept the diversity displayed. The few peers who also stand in opposition have two options. They can drop out or they can stay and experience the strength of individualism. Those who stay acknowledge feelings of being "frozen" (p. 75) or experiencing a sense of "immaturity" (p. 76).
Those students who adhere to the community with authorities who introduce diversity continue to move along in their development. For these students, authorities that introduce ambiguities want learners to work out the right answers on their own. There still are absolutes and multiplicity is an illusion used for mental exercises. These very acts of interpreting why an authority introduces diversity display independent thoughts. For some students there is a retreat to courses that appear to be safe from ambiguity--math and science. For others there is an enjoyment of the introduction of diversity which is enhanced by help freely given by the authority in developing cognitive skills for thinking for one's self.

**Position 3: Multiplicity Subordinate**

At position 3, students make a shift in their view of knowledge. All knowledge is knowable in principal, but some knowledge is not known yet. Someday it will be known. In the meantime, authorities continue to have right answers if known and, in addition, they have the knowledge of ways to find the right answers that are as yet unknown. These authorities give students this information with varying degrees of ambiguity that serves to strengthen students' skills in arriving at the right answers. Another shift at this position is the role of the learner who may be invited to join in the search for unknown right answers especially if methods for searching have been well learned. Evaluation, however, becomes problematic, when there is not a right answer and students are left to figure out what the authority wants. These students have counted on the quantity and hard work or effort on
papers and tests to get them high grades. When confronted with requests to give grounded opinions, students may become oppositional because opinions are not facts and facts are what should count for knowledge. Such opposition may continue individuation but leads the students away from the procedural displays of writing grounded opinions that continue cognitive development. The cognitive skills for writing a grounded opinion add analysis of several different opinions to previous skills of clear and complete descriptions through memorization. It is the procedural display of analysis ("what they want") that leads students to perceive knowledge in a new way and develop a more complex conception of knowledge.

**Position 4: Multiplicity Correlate**

At position 4, the learner chooses one of two branches: multiplicity correlate or relativism subordinate depending on the increasing tendency to oppose or adhere to authority. The oppositional students chooses multiplicity correlate. Knowledge is not absolute but subjective and all opinions are of equal value. Individuals define their own truth and need not defend it since there are no absolute criteria for grounding opinions. Authorities' opinions are no more valid than those of any other individual and may be bad. This freedom from absolutes and the authorities that were thought to hold them allows learners to explore on their own, hold contrary beliefs to authorities and peers, and experience a sense of independence and self-direction. For the men at Harvard, this autonomy was exhibited in public debates with peers and authorities and the worth of the argument was in the
logic of the thoughts expressed. Evaluation was indefensible since the authority doing the evaluation was perceived to have no right to pass judgment because there are no criteria for judgment. As the debates continue, cognitive skills are acquired in order to defend an opinion and the learner comes to perceive that the quality of support for the opinion is more important than the quality of the expression of the opinion. At position 4 learners can think about their own thinking including reasons for selecting certain skills to use in formulating defense of an opinion. The oppositional learner has only a small step to take to move out of multiplicity to contextualism. Ironically, the oppositional student who has stayed in the community has the advantage over the student who adhered to the community.

Position 4: Relativism Subordinate

The student who adheres to the community also has moved to a view of knowledge that cannot find grounds for absolutes. For the introverted learner, this might take the form of thoughtful reflection; for the extroverted learner, the form might involve a logical argument based on recommended ways of thinking laid out by a master in the field. No longer is there a sentimental attachment to an authority; learning involves a mastery of skills that allows an objective view of opinions and the arguments supporting those opinions. Evaluation reflects the new skills for "independent-like thought" (p. 102). Skills of description and analysis are used in expressing "coherence and congruence in reasoning" (p. 102). At position 4, learners can think about their own thinking—meta-cognition: not just the skills involved
but the structure of that thinking and how they select the skills. Peers become a community of learners who are no longer separated by the opinions held or the particular authority to whom one is loyal. If there are smaller communities, those are defined by the field of interest or career being pursued.

For some students, the acting out of independent thought and supported opinions is just that—an act. These students may rely on their skills to get them into the academic hierarchy but their conformity may cover up a "detachment" (p. 108) from the risk of the shift to relativism or contextualism.

**Position 5: Relativism Correlate, Competing, or Diffuse**

Perry's use of the term relativism may be clarified by thinking of this position as contextualism. Knowledge is constructed within a context and is part of a limitless search. The context is defined by the personality and experience of the learner and the field of study. Authority is not defined by role but by level of ability to construct truth. Authorities who continue to play the role of 'Authority' are to be tolerated and treated with the respect due anyone but they are seen for what they are. Within the new context of relativism, these students can look back on dualism as a category for making meaning. At position 4, relativism was a category for making meaning within the dualism position of multiplicity—the category required when absolute knowledge was not yet available. The process involved in this radical change (no longer a shift within the concept of dualism) is less evident even though it is revolutionary in the sense Thomas Kuhn (1962) uses the term to describe changes in scientific theories. Perry attributes this lack
of evidence to a gradual development of a habit that begins in the classroom and then is recognized in less formal settings. It is the permeation of relativism [contextualism] in the Harvard/Radcliffe setting that appears to foster the "quiet" (Perry, p. 111) change.

Learners who develop out of a multiplicity correlate view in position 4 move to relativism and recognize that authorities are in the same situation, thus completing the change from a conception of dualism to a conception of relativism [contextualism]. These oppositional students no longer have to fight the system and can enjoy the reward of the hard work of individuation. Learners who develop out of the relativism subordinate view in position 4 recognize that the way authorities want us to think is the way they think and the change is completed. These adhering students may have the hardest task in coming to change, going through periods where relativism is correlated to or competing with dualism. It is not until both sets of students reach a level where relativism is diffused or permeates their "seeing, thinking, knowing and valuing" that the student is ready to consider commitments which will shape and reshape their identity.

Perry found that during this transition many students neglected their studies and, ironically, it was through the need to figure out what to study and the success this brought that they developed. The stress of change and sense of disloyalty to self as student and to the authorities could lead to feelings of being lost. The role of peers who are or have experienced the same change becomes essential to gaining the strength to continue. In short, peers, self, and authorities are the same; all seek competence in knowing in context. Cognitive skills
expand to include synthesis necessary for making commitments and students become skilled in objective, formal reasoning. The detachment of the objective style may be perceived as regrettable to some students especially if they prefer a more connected way of learning.

The Perry Scheme and Higher Education

Sprinthall, one of the team who worked with Perry, and Thies-Sprinthall (1983) followed up with a persuasive argument to study the effect of shifting cognitive development from an independent to a dependent variable in the design of teacher education. Prompted by Howey (1983), who recommended screening applicants to teacher education for psychological maturity, the researchers pointed out that psychological maturity was a stronger indicator of college and career success (Sprinthall and Thies-Sprinthall, pp. 77-82) than academic records or test scores. However, they went on to note that a student who enters in an immature stage of development (positions 2 and 3) should not be seen as unable to avoid a "permanent classification" (p. 82) at this stage. They recommended consideration of preservice programs that would be suited to the developmental level of students who were homogeneously grouped. This recommendation was based on the programs designed by Widick, Knefelkamp and Parker (1975) reviewed below. It is this researcher's contention that without cognitive maturity, i.e., relativism, preservice teachers may learn certain teacher behaviors currently in vogue, watch a master teacher at work, or practice reflective action activities and not be able to make decisions
within their own classrooms that are specific to their strengths and their students’ needs.

The studies selected for review in this section include applications of the Perry scheme in higher education in a variety of disciplines, programs and colleges and established rating systems for assessment. Counselors and student affairs professionals were the first groups to use Perry based strategies to promote cognitive development and they developed the paper and pencil measures of the scheme. Rating systems based on cues in student writing and interviews became more sophisticated through the early experimental studies. As faculty became more aware of the Perry scheme and its explanations for differences in students' receptions of instruction, they became heavily involved in using the instructional model developed by Widick, Knefelkamp, and Parker (1975) to plan their teaching and the research base expanded. The focus of this review is on studies which reflect on the structure of this study.

The first researchers to define and design criteria for promoting development for persons at different Perry levels and the first to develop a paper and pencil measure of the Perry scheme were Knefelkamp, Widick, and Parker (1975). Their design criteria are based on the notions of diversity, concrete or abstract learning, degrees of structure, and degrees of personalness. The objective is to use these notions to define challenging learning experiences and elements of support appropriate for promoting development for persons in dualism (positions 1 through 3) or relativism (positions 4 and 5). Their dualistic design model is as follows:
(a) introduce moderate diversity or points of view on the topic under consideration;
(b) use concrete, experiential learning activities in doing so;
(c) use highly structured activities;
(d) establish a personal, trusting atmosphere; and,
(e) process for differentiation and the legitimacy of options.

Criteria a, b, and e are seen as challenging for dualists and c and d as supportive.

The relativistic design model is as follows:
(a) introduce extensive diversity on the topic under consideration;
(b) do so abstractly;
(c) do so with a low degree of structure;
(d) process the experiences using both differentiation and integration; and,
(e) establish a personal, trusting atmosphere.

Criteria a, b and d are seen as appropriate challenges for relativists and c and e are supports.

These two models were used in formulating the original prompts and all follow-up prompts in this study.

Widick, Knefelkamp, and Parker (1975), Knefelkamp (1974), and Widick (1975) also developed the KneWi paper and pencil measure of a person's cognitive level based on the Perry scheme. This instrument consisted of five sentence stems and four projective essays. All five stems and two of the essays make up one form of the measure and the five stems and other two essays make up a second form. The Measure of
Intellectual Development (MID) used in this study consists of two of the four essays that originally made up the KneWi.

Widick, Knefelkamp, and Parker (1975) used their criteria and measure of the Perry scheme to design and study the results of a multidisciplinary college course called "Themes in Human Identity" (Widick and Simpson, 1978). Using literature and psychology, two versions of a class were designed. The class with first year students was taught using the instructional model for dualists and included 17 students. The second class with sophomores was taught using the model for relativists and included 14 students. Journals were used in both classes. In the dualist class "the instructors reacted to students personally by extensive dialogue carried out through student journals" (p. 39). In the relativist class the design was much less structured and students were responsible for negotiating assignments, due dates, and extra work. Students had to take responsibility and accept consequences for turning in journals three times during the term at their discretion.

The students were assessed for change using a pre-test and post-test, two group design. The results of the assessment were reported in the amount of change (+1/3, +2/3, +1, +1 1/3, +1 2/3). In the dualist class, of the three students who began as dualists, two moved +1 1/3 and one moved +1 2/3. Of the 11 students who began as multiplists, nine moved between +1/3 to +1 1/3, with five moving one full stage. Of the three students in the class who were relativists, two moved +1/3. In the relativist class, the two dualists each moved +1 2/3, the ten multiplists moved between +1/3 to +1 with six moving +2/3 of a stage.
The two relativists who were matched with the instructional model for the class, moved +1/3 and +2/3 of a stage. Hence, dualists made the largest developmental changes in both classes. Multiplists seemed to be equally affected by the classes as were the relativists who showed the least movement. The only instances of non-movement were in two multiplists and one relativist in the dualist class. The researchers made suppositions that the multiplists and relativist were not ready to move, needing time to internalize the change from dualism. Students reported high degrees of satisfaction with the class, no matter what their levels. See Chapter Five for a discussion of the analysis of journals in this study.

The second year of this experimental course, "Themes in Human Identity" (Stephenson and Hunt, 1977) included a comparison group and used only the design criteria for dualists and the same measure of the Perry scheme. The experimental course settings were two courses, one in the winter and one in the spring of 1975. There were 21 first year students in each course who self-selected based on the personal interests and the description of the course. The comparison groups included 15 first year students in a special Humanities class in the winter, 1975 that was part of a Cross-Disciplinary Program for students who had excelled in the College of Liberal Arts and 19 first year students in an English class in the spring, 1975 who self-selected to fulfill general education requirements and because of an interest in the course.

The comparison courses differed from the experimental courses. The Humanities instructor was not familiar with the Perry scheme but did
respond to differences in his students' "intellectual processing of information" and attempted to meet their individual needs. In doing so, he used some but not all of the dualistic design criteria. The instructor of the English class handed out a syllabus that included required readings and offered choices for course projects but left the decision making up to the students. He was rarely available for conferencing with students, and used a lecture format with limited class discussion.

Two pre-tests and post-tests were administered: the KneWi (Knefelkamp, 1974; Widick, 1975) and the Defining Issues Test (DIT) (Rest, 1973), a measure of Kohlberg's cognitive theory of moral reasoning. The results of the KneWi measurement in the experimental groups showed an increase of 23% at the relativist level in the Winter Quarter course and an increase of 48% at the relativist level in the Spring Quarter course. The average stage movement was .85 in the Winter Quarter course and .85 in the Spring Quarter course. The results for the control group in the Humanities course were a drop of 20% at the dualist level, an increase of 7% at the multiplist level and an increase of 13% at the relativist level with an average stage movement of .42. However, the results for the English class were a drop of 5% at the dualist level, no change at the multiplist level, and an increase of 5% at the relativist level with an average stage movement of .12.

A third study (Goldsmith, 1977) in the course on "Themes in Human Identity" involved the inclusion of "a student development specialist with a literary scholar" (p. 85) to promote the transfer of the developmental strategies to an instructor in a particular discipline (in
this case Humanities). The results of the pre- and post-course interviews and written data as well as observations and "student logs" showed growth along the Perry positions in at least half of the class. These changes were within the multiplistic stage. A second change involved the students' awareness of personal changes in self-confidence and levels of tolerance which could be transferred to other settings than the course.

Knefelkamp and Slepitz (1976) experimented further with criteria that could indicate developmental stage. These areas included: locus of control, analysis, synthesis, semantic structure, self-processing, openness to alternative perspectives, ability to assume responsibility, ability to take on new roles, and ability to take risks with self. They adapted these areas of change to career counseling as a means of identifying Perry stages one goes through in viewing life planning issues which would be useful to a counselor of undergraduate students. Students gave high satisfaction ratings to all classes in course evaluation but higher satisfaction for the experimental classes in areas of:

"(a) instructor preparation, mastery of subject, and responsiveness to student needs; (b) contributions of course structure and procedures to learning; (c) feelings of competence in subject matter; and (d) ranking of course as valuable and one they would recommend to others" (p. 47).

Continuing the study (Knefelkamp and Slepitz, 1976), Stulck and Widick involved 35 students in a career development class at The Ohio State University. A rating form designed by the researchers based on the Perry scheme and the Widick, Knefelkamp, and Parker (1975) design criteria was used by class facilitators (graduate students with a
background in counseling psychology) to test the validity of the criteria for the Perry positions. This study identified the percentages of dualistic (1 through 3) and transition (3 through 4) students who responded to four areas of the course: student motivation, class structure, self-awareness, and student view of career choice. For example, in the area of student view of career choice, 47% of the dualists and none of those in transition "tended to believe in 'right' career for self; students tended to depend on the 'right' sources to identify the 'right' career" (p. 57). In comparison, 36% of students identified as dualist and 87% of the students in transition "tended to believe that many careers could meet their abilities; student[s] perceived the need to choose among alternatives and to make initial commitments so [they] could more actively control [their] future" (p. 57). Issues that were problematic included: "differences between choice and commitment," shifts in locus of control, concerns of limiting options due to commitment and memorized responses based on popular beliefs such as "'there is no right career for anyone'" (p. 57). The results supported the validity of the Widick, Knefelkamp, and Parker (1975) design criteria.

**Application of the Perry Scheme in General Education Courses**

The next step in the process of incorporating the promotion of cognitive development in course work in higher education was to involve faculty outside counseling and student affairs. Widick and Simpson (1978) sought collaboration with the history department at The Ohio State University in order to expand the work with applying the Perry
scheme. The history professor who responded was interested in finding ways to expand the students' ability to deal with complex themes in a course entitled "United States History from 1865 to the Present." The course included one lecture in a large hall and several small discussion groups with discussion leaders after the lectures. The decision was made by the researchers to restructure one section of the small groups using the assigned history department teaching assistant and a second teaching assistant who had a background in history but was doing graduate work in higher education.

The small group seminar was designed to meet the needs of the dualist since the course was primarily attended by first year students and sophomores and a pre-assessment confirmed this judgment. Hence, the design criteria for dualists (Widick, Knefelkamp, and Parker, 1975) were used. Three sections of the seminar were studied using pre-test and post-test design. The experimental section showed the most change, with six students moving +1/3 of a stage, three students moving +2/3 and three students moving one full stage. The other seven students showed no movement. One of the control groups was taught by the same graduate student in history who team taught the experimental group. Tapes revealed that he was incorporating instructional strategies he was exposed to in the experimental class in the control group. This may explain why there was an unexpected number of students who moved between +1/3 (four students) and +1 1/3 (three students) with three students moving a full stage. The remaining six students did not move. The third small group showed a more predictable movement: five students
moved +1/3 and one student moved +2/3 with the remaining eight students showing no movement in cognitive development stages (p. 54).

In concluding remarks, the researchers comment on their enthusiasm for developing a manual to be used by faculty and teaching assistants who showed an interest in the instructional model for cognitive development. However, the use of a manual without additional course work in developmental psychology appeared to be risky since the success of the experimental group was seen as an argument that it was the result of the teaching team that included a graduate student with a background in developmental psychology and counseling. This might be backed up by a comparison of the mid term and final essay scores with the experimental group averaging 75.0 and 82.4 and the two control groups averaging 69.6 and 77.5 for the section with the same history instructor and 71.0 and 74.8 for the third group.

Although there were recommendations on the part of early researchers for teaching assistants to have a good background in the Perry scheme before using it, faculty were working on their own to use the Perry scheme in mathematics, science, and the humanities as well as psychology. Copes (1978, 1980, and 1982) recognized the student Perry (1970) described who retreated to math and science rather than develop into relativism. In a case study set in a mathematics course, Copes (1980) describes the evolution of his own teaching from a dualistic approach using lectures, carefully defined theorems, formulas, and algorithms, and one text book (p. 57) to a multiplicitic approach based on his own understandings and using the text as a resource for assignments. Furthermore, he assigned a paper comparing his lectures
with the text and other texts on reserve in the library. He "forced" students to deal with diversity and with unanswerable problems. Using Widick, Knefelkamp, and Parker's (1975) relativistic design criteria, Copes had his class construct their own theories and techniques for solving problems. Members contributed from their own perspective and skill level, with direction from the teacher as they try out "their own ideas, make tentative commitments to particular approaches, and make aesthetic choices between structurally-equivalent definitions" (p. 57).

The comparative writing assignment focused the students' attention on diversity, learning from one another, and a sense of ownership for the process they have experienced that goes beyond the development of solutions to math problems. Copes concluded the study with a concern that the model works most effectively when there is a match between teacher and the learners. In this case the teacher designed and taught at Perry levels 4 and 5 and the developmental level of the students were at late position 3 and early positions 4 and 5. There was a match. He noted that one student who was still at position 2 continued to ask for "The Answer" and he hoped the other students continued "kidding her about her perspective" [emphasis added] (p. 58).

Copes based his change in teaching on the realization that there were problems in communication between himself and his students and he found help in the Perry scheme. He realized that the history of mathematics had gone through similar stages and in some classrooms teaching of mathematics had never acknowledged contextual relativism. Assessment of students' cognitive developmental position used the KneWi.
Buerk (1985a) continued the work of Copes in her own teaching of mathematics translating cognitive developmental positions into the beliefs reflected in her students' comments. Focusing on multiplism and a high degree of personalism in her undergraduate classes in mathematics at Ithaca College, she tried to take the students through the transition dualism (position 3) to relativism (position 4), assuming her students were ready for this transition. Reporting on specific mathematical experiences for students in a multiplistic setting, Buerk believed these students needed "to value alternative approaches and methods" (p. 10). This is one of the Widick, Knefelkamp, and Parker (1975) criteria. A descriptive case study was included focusing on a young woman who had developed to multiplism correlate, the oppositional branch of position 4 in the Perry scheme. The case study was based on the researcher's observations while teaching and on follow-up interviews. Buerk identified the student's cognitive position by "a sense of personal independence" characteristic of position 4 (oppositional) during a class discussion (p. 11). The student was asked to describe "the setting she would design for herself to learn mathematics" in a non-judgmental atmosphere (p. 11). To avoid the judgment of evaluation found in most courses, this student opted to audit the course in her ideal world. In interviewing the student, this oppositional student also wanted to be able to question how mathematics works. In conclusion, the researcher acknowledged that despite the chaos the student's ideal setting might produce, it may be necessary for this student's intellectual development.
Continuing the work done by Copes and Buerk, a study by Stonewater, Stonewater, and Perry (1988) described the use of clues in mathematical problem solving leading to the development of the Instructional Model for Problem Solving (IMPS) based on the Perry scheme and using the work of King (1978), Widick (1975) and Knefelkamp (1974). The authors described such developmental clues as "student comments, questions, or ways of analyzing a mathematical problem that give teachers a way to informally assess levels of cognitive development" (Stonewater, Stonewater, and Perry, p. 275). The researchers have included attributes of the various stages of development and examples of clues. They hoped their scheme might be used by teachers to assess informally and then intervene appropriately to facilitate growth.

Based on this assessment system, Stonewater, Stonewater, and Perry (1988) also describe four strategies for instructional design based on the needs of students at different Perry positions. They emphasize diversity, direct experience, providing structure, and +1 reasoning (p. 282). These strategies are very similar if not the same as those of Widick, Knefelkamp, and Parker (1975).

Continuing work on assessment of the Perry scheme, Baxter Magolda (1987a) studied the relationship between the open-ended interview used by Perry and his associates and measures of intellectual development that were developed since the Perry scheme was introduced. The study was done using the Measure of Epistemological Reflection (MER) designed by Taylor (1983) [Baxter Magolda's previous name] and Baxter Magolda and Porterfield (1985). Although there are limitations to the study, including small numbers of participants, the results indicate that
assessment of the Perry scheme could be done with Perry's interview or the MER paper and pencil instrument. The two methods were highly correlated.

Van Hecke (1987) described a course in Abnormal Psychology using the Perry scheme and the Widick, Knelfkamp and Parker (1975) criteria for design as a resource for restructuring the class. The change in structure for the course resulted in an emphasis on the "historical and anthropological perspectives" (p. 10) because they introduced the "notion that truth is relative" (p. 11). In previous classes, the researcher viewed this content as lacking in substance. Using the notions of challenge and support, the students were instructed to outline a chapter of the text supporting the need for a familiar structure. To challenge the students, they were required to indicate relativity as found throughout the chapter. The second task was to write about a personal example including real life experiences or examples from books, newspaper or magazine articles on abnormal behavior and to describe a context in which the behavior would not be judged abnormal. The third and fourth tasks involved a similar written task using three examples of behavior considered abnormal due to the historic context in which they were set and three behaviors judged abnormal by the cultural context. Other assignments built toward a position paper that was the final requirement of the course and required evaluation of research studies used for an individual case study. Detailed guidelines were given for all assignments leading to the position paper as support but students were expected to make a commitment in the position paper which served as a challenge even to students who reached position five
in the Perry scheme. In essence, Van Hecke used the dualistic and relativistic design criteria to plan her class.

The results of the course were surprising to the researcher who knew the students were upset by the changes she had made. The class evaluations proved to be "one of the most positive sets of evaluation" the researcher had ever gotten from a group of students (p. 15). The conclusion was that students had been offered the opportunity, within a course structured to offer the support of guidelines and extensive feedback, to make the "leap of faith" Perry described as essential to commitment that leads a student to define his or her "identity and involvements in the world" (p. 15). The paper included appendices with the assignments and criteria for evaluating work so that others who might want to transfer the changes to their own courses could do so.

The concluding review is a study by Baxter Magolda (1987b) describing the convergence of three theories in planning instruction for a graduate level course on student development theory. Kolb's (1984) theory of experiential learning modes, Myers and Briggs' theory of personality types (Myers, 1980), and Perry's scheme of intellectual and ethical development (1970) were considered in the planning. The goals of the design of the study were taken from Widick, Knefelkamp, and Parker (1975). They included ways to "foster subject mastery, personal development (defined as cognitive development on the Perry scheme), and student satisfaction" by matching teaching to learning in a heterogeneous class of learners.

The study involved a class of 21 students, 12 women and nine men. Eight students were in their first year of a master's program, 12 were
in their second year and one was a doctoral student. The age range was 22 to 45 and 25 was the average age. The course was 16 weeks in length and the content was the study of five theories: "Chickering, Perry, Kohlberg, Gilligan, and Myers-Briggs" (p. 32). During the beginning of the term, students' positions on the Perry scheme were determined using the Measure of Epistemological Reflection (MER) with most at the relativistic level. However, the researcher anticipated that students new to the master's program might need the support of structure.

The goals and design of the study specifically entailed means of matching the learner's preferences and cognitive developmental position through: class format (the way sessions were structured), assignments, and assessment instruments" (p. 33). For example, class activities included role-play of each level of Perry scheme within the context of career exploration as a concrete experience in learning.

Measurement of the effects was made using course grades and students' reports on evaluation forms including a special form designed for the study and a standard university course evaluation form. Magolda chose not to use a pre-test, post-test for cognitive developmental change because of the 16 week time frame which she believed would cause the pre-test to affect the post-test and would show no significant change because 16 weeks is too short a time. This conclusion is not supported by other research which indicates measurable change can occur in ten weeks if the environment is appropriately challenging and supportive.

Results of the study indicated that students viewed the course as effective although the researcher warns that such a small number of
students, the lack of a control group and the use of self-reports limited the interpretation of the study. The conclusion was a recommendation to continue the use of "active teaching modes based on learning styles and cognitive intellectual development in other content areas" (p. 39).

Other Uses of the Perry Scheme in Higher Education

At the University of Minnesota, a program (Carrier, 1981) was implemented to improve teaching in general by offering faculty a variety of opportunities to learn about "developmental and learning characteristics of students" (p. 24). The "Teaching Improvement Consultation Project" brought together consultants from the faculty and faculty members in a program that would overcome the lack of information about "instructional strategies and student characteristics" (p. 20) including the Perry scheme. The consulting staff went through a bi-weekly training session over 12 weeks. These consultants were paired with a faculty member in four settings (agriculture, liberal arts, pharmacy, and education) where they diagnosed their colleagues' courses, then the team analyzed problems and developed a program for change specific to each faculty member. Consultants continued in their role with observations and feedback. Seminars were held with faculty for discussion of teaching practices in a supportive community with consultants modeling recommended practices including a balance between support and challenge. Evaluation of this program proved difficult and involved the use of an internal evaluator working with the project staff to identify issues. Results included a report by the faculty at the end
of the year and indicated an awareness for the need to change current practice and "a deepened understanding of students" (p. 24). Problems that were brought to light included the limitations of focusing on faculty change, lack of measurement of student change and satisfaction, and the slowness of the process due to the structure of the team of consultant and faculty member.

As early as 1979, entire colleges began to focus on the Perry scheme as a way to understand their students and to redesign the curriculum and out of class activities to meet individual student needs (Goldberger, 1979). A study at Simon's Rock College gave validity to the Perry scheme descriptions. Goldberger (1978) observed that many of the dualistic students who chose to major in science and math had problems with teaching teams, and could not distinguish between quantity and quality in performance (p. 14). These same students tended to accept multiplicity in the arts (dance, visual arts, and music) perceiving of the arts as validly subjective in nature. Not surprisingly these students were quiet, "tend[ed] to have stereotyped attitudes about acceptable behavior," and saw peers as being part of an "in or out group" (p. 15).

Multiplistic students at Simon's Rock appeared to be in the oppositional student population of Perry's position 4; typical of this stage the students were described as "hostile, opinionated, undisciplined, and disorganized" (p. 18). They avoided making judgments based on the quality of diverse opinions within a context by selecting the opinion that "feels right and dismissing the rest as 'somebody else's bag'" (p. 18). Position 5 relativists were seen only in the
junior and senior classes and are described in terms of their maturity, seriousness, and academic ambition. These students used criticism to enhance their learning and enjoyed a variety of classroom formats. In fact, their only aggravation seemed to be the annoying behaviors of the dualists and multiplists who shared their classes. It was this dilemma that leads to the concluding remarks. Acknowledging that commitment was the next step, the author points out that most students do not reach a level of commitment until they have finished undergraduate work and even then changes in commitments are part of a healthy and continuing developmental process. In conclusion, Goldberger posed the problem that students either need to be divided into homogeneous groupings by cognitive development level or strategies need to be designed to meet the needs of heterogeneous groupings. She eliminated the former due to a perceived need for heterogeneous grouping to promote cognitive development in dualists and multiplists.

A more recent (Gabelnick, Howarth, and Pearl, 1984) application of cognitive development strategies across a program for academically gifted undergraduates was reported in a study of the General Honors Program at the University of Maryland. This experimental study took place in two seminars: "Introduction to Compleat Wisdom" [this is not a typographical error but a reference to Sir Isaak Walton] with 16 students and two teachers, and "Learning about Learning: A Conspiracy of Teachers and Students" with 11 students and two teachers (p. 1). Both courses focused on diversity; the former focused on differing views of the world and the latter on different ways of learning. Another seminar for honors students was taught by a teacher who had a "similar
style and educational values" (pp. 5 and 7) to those teaching the experimental sections. The Perry scheme was the theoretical basis of the experimental seminars and the Measure of Intellectual Development (MID) (Knefelkamp, 1974, Widick, 1975, and Moore, 1982) was the instrument for measurement using different versions of the MID for the pre-test and post-test. Pre-tests and post-tests were scored by two certified raters who met to reconcile disagreement over scores.

The strategies for promoting cognitive development reflected the emphasis on self-exploration including: [t]est instruments, journals, in- and out-of-class discussions, and specially designed assignments" (p. 3). After the pre-test, students were introduced to the Perry scheme but care was taken to avoid labeling students and to emphasize that students' developmental positions are inappropriate for making judgments. The same non-judgmental emphasis was made when students were informed of their Myers-Briggs personality type. [It should be noted that students did not take the MBTI but used the Keirsey Temperament Sorter which results in the same labels.]

Journals were used in both classes focusing on class content to varying degrees. In "Compleat Wisdom" the journals were written in dialogue with the instructor; in "Learning about Learning" the journals were written and read by everyone including the instructors.

Just as in this study, the personal responses in the journals at the student's developmental level and the general approach to the seminars were designed to move each student to the next cognitive developmental position. Choices were offered in assignments at both
dualistic and the multiplistic levels. Debate on the length and frequency of dialogue entries was not reported.

The results showed a mean increase from 2.96 to 3.31 or a +0.35 of a stage increase in Perry position for "Compleat Wisdom." The results for "Learning about Learning" showed a mean increase of 2.89 to 3.41 or a +0.52 increase in Perry position based on the pre-test and post-test scores for nine of the 11 students [two students did not complete both pre-test and post-test]. The authors noted [in the abstract to the paper] that no more than a +0.2 increase is expected if there is no intervention. It is interesting to note that the researchers did not include the results for the control group explaining that the results were suspect due to the attitude of the students taking the post-test. The study included quotes from the journals and follow-up interviews with students to indicate changes in cognitive developmental positions.

Replication of the Perry study at Wellesley College (Clinchy and Zimmerman, 1975) investigated cognitive development in undergraduate women. Differences besides the gender difference included "sex of interviewers, sex of coders, type of interview, time and place of testing," (Clinchy and Zimmerman, 1982, p. 163). The focus of this study also was the "development of agency, the capacity to decide and to act and to trust one's decisions and actions" (p. 163). There was no sense of agency at the basic level of duality. This lack of agency persisted through position 2 and remains in position 3 where students related opinions to feelings, espoused that everyone has a right to her own feelings and opinions, but believed these to be determined by
family and the community where she grew up. At this position students listened to one another, respected diversity, and resorted to what felt right. If a change in opinion was made, it was influenced by "consensus as a criteria" for making the change (p. 166). At position 4, students continued to be unable to act on their own and were aware that they could not speak for themselves but spoke in the voice of their teachers. They looked for the number of facts that could be assembled to 'back up' an opinion when required to do so but they were not convinced by this academic exercise. Another way to meet academic demands was to develop the best argument by understanding the context of the opinion. These experiences led these students to a sense of agency, and to a complete sense of agency in position 5. The results of this study appeared to confirm the view of knowledge in the Perry scheme as valid for these women but the development of agency in women may be different.

A study that had a similar strategy in combining Perry's theory for cognitive development with a hierarchical set of learning skills was documented in an article by Andrews (1981). In this descriptive study, the setting was the discipline of Organizational Behavior and the learning skills were Bloom's Taxonomy (Bloom, Engelhart, Furst, Hill, and Krathwohl, 1956) which included: knowledge, comprehension, application, analysis, synthesis, and evaluation. The first three were appropriate to the dualists and it is the fourth, analysis, that opens the student to relativism according to Andrews (Andrews, p. 9). The need to use synthesis as a means of "recombining or reorganizing existing concepts" (p. 10) led the student to the possibility of
commitment due to the intimate involvement in the creative act of synthesis.

The article explored five issues: (a) combining the content in the discipline of Organizational Behavior with the objectives in the Bloom Taxonomy; (b) use of a writing assignment early in the course work that involved various levels of thinking to assess cognitive developmental levels; (c) effective ways to communicate objectives to students at various cognitive developmental levels; (d) the structure of activities to meet objectives; and (e) a variety of ways to take care of the cognitive developmental needs in a heterogeneous class. The conclusion was a recognition of the possible commitment of faculty to extend the purpose of a course to include both content and student growth. Experimental data were not collected.

At the beginning of this section, reference was made to the following study by Sprinthall and Thies-Sprinthall (1983). The researchers, prompted by Howey (1983), who recommended screening applicants to teacher education for psychological maturity, pointed out that psychological maturity was a stronger indicator of college and career success than academic record of test scores. However, they went on to note that a student who entered at an immature stage of development did not continue with this as a "permanent classification" (p. 82). They recommended consideration of preservice programs that were designed to suit students grouped homogeneously by developmental levels based on programs incorporating criteria by Widick, Knefelkamp, and Parker (1975). The Sprinthall/Thies-Sprinthall recommendations included the issues of match/mismatched cooperating teachers and student
teachers (Sprinthall and Theis-Sprinthall, pp. 89-91). They explained that a match between student teacher and cooperating teacher for developmental level would be supportive at the beginning of the student teacher's field experience but the challenge of a cooperating teacher at a higher level might offer opportunity for the student teacher to grow developmentally later in his or her experience.

To sum up this section of the review, the Widick, Knefelkamp, and Parker (1975) criteria for designing environments that facilitated growth on the Perry scheme appear to have a solid basis of support. Measurable developmental change appeared to take a minimum of about ten weeks in environments designed with the Widick, Knefelkamp and Parker criteria, and the amount of change that could be expected depended upon how many elements in the environment had been appropriately designed. When most, if not all of the elements of a course had been designed using the criteria, then changes of +1/4 to +3/4 of a stage (.25 to .75) seemed reasonable. If none of the course had been designed using the criteria, the change of .05 to .17 seemed to be the pattern of results in the literature. In mixed environments, .17 to .33 of a stage seemed to result.

Journals have been one method of implementing the design criteria. Several studies of deliberately designed courses have included dialogue journals between instructors and students, hopefully implementing appropriate challenges and support on an individual level. In this study, this instructor/researcher studied whether the intervention of only a dialogue journal was powerful enough to facilitate cognitive change on the Perry scheme. In addition, this
researcher investigated whether the data in the journal were adequate to formally assess a student's position on the Perry scheme, thus eliminating the use of standardized instruments for that purpose.

**Cognitive Style**

*Women's Ways of Knowing*

Belenky, Clinchy, Goldberger, and Tarule (1986) collaborated on a study that was designed to extend the work of Perry (1970) and was influenced by the work of Gilligan (1982). The design of the study was based on interviews with 135 women that focused on cognitive development through an invitation to talk about life and learning. The women represented nine institutions, including "human service agencies supporting women in parenting their children" (Belenky, Clinchy, Goldberger, and Tarule, p. 12), a women's college that is comparable in curriculum to Ivy League colleges exclusive to men, a progressive college whose rural students represented diverse socio-economic backgrounds, a private college that focused on the arts, an urban community college, a college whose student body was selected after completing only two years of high school, and an alternative high school designed for at risk students.

The interviews were transcribed and blind coded and sections that needed to be scored were done so by raters who had no knowledge of demographics of the participants. The interviews were analyzed to "elicit knowledge, and authority" (p. 14). There were differences from what the Perry scheme revealed with male students in a single setting.
(Harvard College). The data did not reveal an obvious, shared continuum but rather a variety of "perspectives" that influence the view of knowledge and a world view (p. 15). These researchers made clear that changes in cognitive development were not a primary concern and the single interview format did not allow for a clear description of change. Using reflective narrative that described change from selected interviews and rare instances of repeated interviews over time inferences about cognitive development could be made, however.

The authors stipulated five limitations to the study, including the possibility that the perspectives they identified may be changed with future studies, that the perspectives represented a generalization of a perspective and did not reflect the unique nature of each interview, that the perspectives might be gender related but they were not gender specific, and that other researchers might have reached different conclusions using the same data. A further limitation was the low number of women in the perspective referred to as Silence [see description of this perspective below]. After the initial analysis, the data was reentered for a "contextual analysis" which resulted in ten pairs of categories and in the pervasive metaphor of "gaining a voice" (p. 16). The perspectives were described in terms of "knowledge and truth, power and authority, and voice" (handouts from Belenky and Goldberger, Conference on Critical Thinking, 1992).

Silence as a Way of Knowing

The women living and making meaning within this perspective had no sense of mind, they knew nothing and could only learn by being shown
because words were not accessible for them. The authority had all the power and all the knowledge. For these women there was no voice and they viewed themselves as deaf and dumb and described words as weapons. They were silent, passive dualists.

**Received Knowing**

The women living and making meaning in this perspective had acquired the ability to learn and they viewed knowledge as an absolute that was delivered by the authority and that could be learned. This authority held the truth and one could gain power by joining up with an authority. In this way, the women became part of a community. The voice for these women was a "voice of imitation" (first page).

**Subjective Knowing**

The women who spoke and made meaning from this perspective experienced a loss of faith in the authority and acquired a sense of their own voice of authority. These changes shifted their view of knowledge so that it was based in intuition and personal experience. As they became stronger there was a sense that they could articulate their subjective truth based on a gut instinct, but it would be hard if not impossible to describe and this seemed to validate an anti-intellectual attitude. Power and authority were now held within the women and not out there in authorities. Further, although truth was a matter of opinion, there was a strong internal conviction that allowed women to develop a community based on shared beliefs. Such strong convictions might lead to a dogmatic attitude.
Procedural Knowing

Women who viewed knowledge through a sense of procedure become proficient at objective perceptions of knowledge and gained skills in the intentional use of reason. These women were able to accept a variety of interpretations based on the point of view of various speakers. There were two ways that procedural knowers view procedure, power and authority. One group resembled the male attributes in the Perry study and the other group was obviously different. Borrowing from Gilligan's (1982) terminology these groups were referred to as separate and connected knowers. The separate knower views objectivity as a detachment from the object under study, has a sense of the hierarchy of the intellectual community and sees power for herself through joining the intellectual elite. Women in this group temporarily lost their voice as they assumed the voice of the community they aspired to join.

The connected knower viewed objectivity as a valuable tool for knowing but preferred to plunge into the topic under study in order to gain the knowledge. These women enjoyed learning about others' perspectives and were eager to share both power and ideas. The voice of these women was one reflecting both reason and understanding.

Constructed Knowing

Women who have developed to this perspective described knowledge as constructed by knower or knowers and gave value to a variety of ways of gaining knowledge and differences in systems for thinking about ideas. Truth could change depending on its context. It was complex, and not constant. These women were able to use both connected and
separated modes of knowing. While there was a strong sense of their own authority, there was an interest in and value given to the knowledge others were shaping. It might be necessary for some of these women to compromise their sense of power in certain social situations. However, there was a strong concern about acting on the values that personal knowledge revealed. The voice of these women was consistent in both public and private settings and rang with the sound of reason and care although it might not always be heard.

This simplified description of the perspectives gives a sense of similarities and differences with the Perry scheme that have been elaborated on by Rodgers (1990, 1991), who made the point that the structural component of cognitive development, the view of knowledge, did not show differences between the Perry scheme and Women's Ways of Knowing. (See Appendix A for Rodgers' comparison of the stylistic differences in Perry's scheme and Women's Ways of Knowing.) The differences were in views of self, peers and authorities and therefore were behavioral differences or differences in cognitive style. The same conclusions were reached independent of Rodgers by Baxter Magolda (1987, 1988a, 1988b, 1989) in studies of both men and women using the Measure of Epistemological Reflection which she designed as a measurement of the Perry scheme.

Applications of Connected and Separate Knowing

Although the theory of connected and separate cognitive style is relatively new, there already have been applications in higher education. Buerk (1986), for example, was concerned with the teaching
of mathematics to women based on the differences Gilligan (1982) had uncovered in her work with the Perry scheme (1970). Buerk recognized two styles of reasoning that reflected the differences between the way mathematicians work and the way mathematics was being taught. She also recognized non-contextual, structured ways of reaching a solution versus experiencing a problem by relating it to one's own world and clarifying the problem to avoid ambiguity. She also saw a distinction between understanding "rights, rules, and universal principles of justice" and an understanding of "responsibilities and interrelatedness of ideas and options [as well as] a tolerant attitude toward rules" and a willingness to allow exceptions (Buerk, 1986, p. 28).

With these differences in mind, she made two changes in her course. She limited the class to a small group of women. Students were given the opportunity to reflect on a problem individually in order to develop questions about the problem that would be brought to the whole group for discussion and clarification until each had an understanding. As resolution became the focus of the group, a third change in teaching strategies allowed students to write in a common journal [emphasis added]. This tool for expression of "feelings and personal views" (p. 29) continued as a strategy in freshman mathematics courses. Buerk used some of the same strategies in a seminar on writing about mathematics. Hence, she demonstrated the connected learning style can be used in fields such as mathematics.

The results of these interventions led to positive responses in the students especially feeling that "mathematics can be understood, that it was created by people and people continue to refine it, that
rules exist and can make sense, and that several methods may exist for a solution and none is more 'right' than another" (p. 29). Furthermore, the best solution is the one that makes the most sense to the person confronted with the problem. The similarity of the two styles of reasoning to the attributes of separate and connected knowers is a precursor to the differences in structure and style that are gender related though not gender specific.

In the Baxter Magolda (1989) study of gender differences in cognitive development, distinctions are made among learning styles or orientations based on the work of Kolb (1985), cognitive complexity based on the work of Perry and his associates (1968, 1970) and learning styles based upon Women's Ways of Knowing (Belenky, Clinchy, Goldberger, and Tarule, 1986). The study as described earlier in this chapter (pp. 42-43) was set in a course on student developmental theory at the graduate level. The results of the study showed "no differences on the basis of cognitive structures or [Kolb] learning styles" (Baxter Magolda, p. 218). However, there were differences within [emphasis added] cognitive structure which the author refers to as a "learning orientation" (p. 218). Most but not all of the women she interviewed had learning orientations similar to connected style and most but not all of the men had separate learning orientations. Secondly, the two styles were found in dualism (positions 2 and 3) and not just in position 4 as reported in Women's Ways of Knowing (1986). In conclusion, Magolda urged student development educators to attend to these differences as a means of assuring that women are valued as knowers (p. 219).
Clinchy (1989) put separate and connected knowing into perspective by pointing out the emphasis on critical thinking as an 'end' is misplaced. Instead, critical thinking as separate knowing style is one 'means' to more complex thinking. The researcher proposed a balance between critical or separate thinking and connected thinking for an end. That is, a balance of styles would acknowledge the gender related style of connected knowers. This study found both styles, connected and separate, in students at Wellesley College at the received (dualistic) and subjective (multiplistic, position 3) stages as well as the procedural (multiplistic, position 4) stage. Hence, Clinchy also found the separate and connected distinction at all levels of cognitive stages and not just at Procedural Knowing, level 4.

Clinchy suggests that both styles are valuable for all students. Separate knowing allows detachment, tries to assure unbiased judgments, uses an adversarial approach that permits criticism of one's own work as well as work by others including an ability to edit and redraft a piece of writing. If this is the only way of knowing, however, one can only choose to enter a discussion through the avenue of disagreement or "remain silent" (p. 17). The value of connected knowing is that it allows one to enter into another's ideas, to explore the source of those ideas, an ability to "look for why [an idea] makes sense" (p. 18). Clinchy also speculates that the prevalence of cognitive developmental 'jumps' from a dualistic to a multiplistic level for first year students who are connected knowers may be due to the narratives they share, not the argument in which they participate. Thus, connected knowing that is
based in narratives may promote cognitive development through an analysis of shared stories.

In a presentation to the 1990 meeting of the American Psychological Association, Hettich (1990a) proposed a new way to organize undergraduate psychology courses, define assignments and describe epistemological development in students. The proposal was based on a synthesis of Maslow's belief that knowledge can be broken down into "experimental knowledge and spectator knowledge" (p. 1) and Belenky, Clinchy, Goldberger and Tarule's (1986) connected and separate knowing. Hettich saw a connection between experiential knowledge and connected knowing as well as a connection between spectator knowledge and separate knowing. It was pointed out that while Maslow believed these two ways were hierarchical with experiential knowledge inferior to spectator knowledge, spectator knowledge without experiential knowledge was less powerful. Hettich proceeded to introduce a rating system for writing assignments that was based on a scale of 1 to 5 with the lowest rating given for Experiential writing and the highest rating for Spectator writing. A second scale of 1 to 5 was ranked from Constructed knowledge to Connected Procedural knowledge to Separate Procedural knowledge. These two rating systems contrasted two ways of valuing student writing--APA values for spectator knowledge and separate procedural writing and the possibility of another way based on the research in Women's Ways of Knowing (1986). He confronted his academic community with the discrepancy between expectations for acceptable papers and the cognitive development of the students writing those papers. His suggested solutions were journal writing and the Senior
Synthesis, two assignments designed to promote cognitive development and based on the Women's Ways of Knowing research.

Hettich used a graded journal in ten different courses in Psychology. The journals represented 20% of total grade and replaced a term paper. Journals were designed to promote cognitive development and "de-emphasized the affective aspects of student experiences" (Hettich, p. 6). Journal writing occurred for the duration of the course, was designed to tie personal experiences with course content and required the student to write in the first person. Journals were a means for the researcher to model a valuing of experiential knowledge, the use of connected style, development of reflection, and an emphasis on integration.

In advanced courses, Hettich encouraged students to analyze their entries according to Perry's scheme (1970) and Bloom's Taxonomy (1956). It was the author's intent to extend the self-analysis to include the Women's Ways of Knowing scheme. He analyzed the journal writing according to connected and separate style as well as procedural and constructed knowing. The analysis appeared to compare connected style with constructed knowing, although he admitted he had no examples of writing incorporating connected style within constructed knowing. Journal entries were used in writing research papers and appeared to extend the students' understandings which "the traditional APA report does not permit" (Hettich, p. 8).

The Senior Synthesis was a writing assignment Hettich used as a pilot study in a required seminar for majors in Psychology. There were five assignments, including:
(a) major insights from Psychology and non-Psychology courses,
(b) a biography of a hero/heroine in Psychology pre-1900,
(c) a second biography from the twentieth century,
(d) a related current topic from American Psychologist, and
(e) a related conclusion focused on college goals and the future.

(from handout for Psychology 351, Senior Seminar Research, Fall, 1989).

The evaluation for the pilot study was a survey filled out by students involving a 7 point scale on the extent to which the student had "an opportunity to articulate and integrate the major insights developed during her/his college years with specific ideas learned during the Senior Seminar" and a response to the question of the strengths of the seminar. Student responses showed the following ratings:

5.3 accomplished course objective,
5.3 stimulated critical thinking,
6.0 permitted expression of what had been learned,
5.7 connected course with plans for the future, and
4.6 agreed that synthesis assignment was a substitute for a term paper (Survey report, Hettich, 1990).

The strengths included the variety of materials covered, sense of interrelatedness and connections of ideas, opportunity to tie together four years of studies, and self-expression. Suggestions for improving the course included complaints about limitations due to use of a single text, inequality between the amount of work done on the project and the
amount of credit for the course (1 hour credit), inability to go into
deepth because of lack of experience in the field, lack of creativity for
project due to specificity of assignment, and lack of specificity of the
assignment leading to difficulty (from report on survey sheet handout
for APA 1990 presentation). Final grades in the pilot study included
eight A's, two B's and two D's (p. 9). "The good papers reflected
Separate knowing in the essay sections, and Connected, sometimes
Constructed knowing, in other sections" with older students
predominating (p. 9).

In a final study for this section of the chapter, Rodgers (1991)
compares Perry's scheme (1970) and Women's Ways of Knowing (1986) (see
Appendix A), and then uses the results to redesign an accounting class
using each theory and King's (1990) guided reciprocal peer-questioning
procedure. The course under scrutiny was a sophomore level course in
accounting that met five days a week for an hour and included a formal
debate with both topic and roles for participants assigned by the
professor. In this process, those who were not presenting the pro or
con side of the topic were required to be prepared to ask questions of
the debaters and all students were required to write four page papers on
each topic. Although students were given formal resolutions from which
to work, there was no instruction on how to construct their role in the
debate. Rodgers questioned the developmental appropriateness of the
assignments for dualists and connected learners. The design reflects
extensive diversity, is unstructured, requires both differentiation and
integration skills, and is abstract. These are appropriate for
relativists and not the dualists who in fact are the class. The style
is separate and most of the students in the class in fact preferred separate style. Students in the class were assessed using the KneWi as follows: 72% at positions 2 or 3 and 28% at position 4 (Rodgers, p. 32). Furthermore, 75% of the students were described as preferring separate knowing and 25% preferred the connected style.

Rodgers suggested three changes: (a) no more than two or three points of view which might even be specified by the professor to add structure, (b) class time allotted for observing and practicing strategies in debating, and (c) avoidance of coming to conclusions and reinforcement of multiple perspectives by pointing out the strengths of arguments on both the pro and con sides fortified by the evidence students have presented.

The suggestions for redesign for connected style learners were more extensive and followed the procedures outlined in King's study for "enhancing peer interaction and learning in the classroom through reciprocal questioning" (King, p. 664). The procedure involves a self-questioning by individual students based on generic questions for the assigned topic. This is followed by posing the questions and answers in a small group discussion. Examples of the questions that challenge dualistic thinking include: "What do you think would happen if...?" and "Explain why...," and examples of relativistic challenges include: "What is a possible solution to the problem of...?" and "In your opinion, which is best...? Why?" (p. 669). Rodgers translated these questions into the context of the accounting class. Based on the dualistic majority, questions for individual and small group discussion prior to debates included: "What do you think would happen if we had a
law requiring corporate budgets to be public?" and "Explain why management might not want budgets made public. Explain why stock brokers might want budgets made public" (Rodgers, p. 36). Rodgers clarified the need for explanation and practice noting that King (1990) recommended one half hour for "guided practice" in forming questions and an hour of demonstration and practice in "peer-questioning" with feedback from the professor (p. 670).

Rodgers warns that one's cognitive development is rarely at a plateau or stage and the transition periods are difficult (Rodgers, p. 38). Therefore, it is essential that instructors who incorporate cognitive developmental goals into their classrooms use strategies to determine the cognitive developmental levels of the students and match teaching strategies to the instructional model of supports and challenges. Furthermore, the instructor needs to be prepared for resistance to change which is not only difficult but requires a change in how students view their personal identity.

Journals in Higher Education

Overview

Journals have been used as a personal record for a variety of reasons and within a variety of settings. The personal nature of the journal has relegated it to private use rather than public use. Holly (1984) made the point that people in a range of professions have used journal data to gain clarity, increase the range of their ideas, and add to the knowledge base in their chosen fields (p. 8). Examples of these journal writers include scientists such as Charles Darwin (1877);
historians like Samuel Pepys (1893); statesmen such as Hammarskjold
(1964); authors including Dickens (1917), Kipling (1930), Woolf (1953);
and child and adult developmental psychologists including Piaget (1952)
and Maslow (1979). In the field of education, Sylvia Ashton-Warner
(1973) used a personal journal to document professional challenges in
the classroom.

Progoff (1975) formalized instruction and training in a variety
of approaches to journal writing so that entries can be specific to the
needs of the writer. Holly's (1984) instructions for "keeping a
personal-professional journal" are specific to the needs of teachers.
Clark and Yinger (Clark, 1981, Clark and Yinger, 1979, Clark and Yinger,
1980) studied the work of teachers through the use of reflective journal
writing. Stanton (1988) documented the use of journal writing in
elementary and middle school classrooms. Fulwiler (1980) encouraged the
use of journal writing across the curriculum at the high school level.

Stover (1985) developed a conceptual framework for the use of
journals in preservice teacher education (see Appendix B). This
framework is a synthesis of Griffiths' (1964) Paradigm for Theory
Development and Goodlad's (1966) "conceptual system for dealing with
problems of curriculum and instruction" used as a guide to investigate
theories of the writing process against the background of "principles
and knowledge in philosophy, psychology, sociology and social
psychology, and pedagogy" (Stover, p. vi). Stover (1986) suggested
structuring writing assignments that would aid in integration of
thoughts, explore personal values in relation to society in general,
develop skills in a broad range of written expression, understand
influences from past experiences, use role play, and focus on objectives.

Hence, in general journals have been used for many purposes and in many settings. One of the settings is education. One of the purposes is to reflect on one’s own thoughts and thought processes. Both of these are present in this study. The specific literature on journal writing in higher education reviewed in this section focuses on (a) development of skills, (b) development of personal learning styles, (c) development of higher order thinking, and (d) journals as the primary source of research data. Studies in these four areas include the use of journals in preservice teacher education but are not limited to this setting. Review of the studies will include the goal(s) for journals as an instructional strategy, any intervention used by the researcher(s), results of the use of the journals, and implications or conclusions by the researcher(s).

Before reviewing studies using journals in higher education, however, there is an issue that needs to be addressed. Can introspective writing reveal intrapersonal communications or, put more simply, does the personal writing in the journal accurately describe what a person is thinking about their own learning? If not, is the journal still a valuable tool for cognitive research and cognitive development? In the case of dialogue journals or journals being read and responded to by another, how does the writer react?

Jensen (1989) addressed the issue of the intrapersonal nature of introspective writing using the metaphor of the journal as "a mirror of inner speech" (p. 111). Acknowledging that there are different forms of
intrapersonal communication, the author found autobiographies limited due to a preoccupation with image and the changes in earlier events to fit the current point of view. Diaries were found to be much more accurate in detailing events over time and capturing the development of a personality. However, journals appeared the most valuable with the potential for containing reflections on events and as a documentation of processes in developing ideas and insights. The analysis concluded with a description of memoirs as a collection of significant events, self-definitions, myth making, repeated thoughts that were like the mental processes they reflect. He also concluded that such writings "refute some scientists' belief that the human brain can't understand itself" (p. 132).

On the other hand, Nisbett and Wilson (1977) reported that evidence might dispute the ability to have "introspective access to higher order cognitive processes" (p. 231). The researchers proposed that what people were doing in response to questions about cognitive processes was reporting their thoughts not the process of thinking. Studies in psychology appeared to confirm a lack of "conscious awareness of perceptual and memorial processes" (p. 232).

Tappan (1987) took a different stance than either Jensen or Nisbett and Wilson in evaluating the quality of introspective reports on cognitive processes and therefore the usefulness of such reports. Tappan's stance is the stance taken in this study. This stance is based "in the use of hermeneutics (Feldman, 1987), the interpretive mode in social sciences (Rabinow and Sullivan, 1979), and the interpretive mode in developmental psychology" (Bruner, 1976, Gilligan, 1982, Habermas,
1983, Kohlberg, 1984, Packer, 1985, and Tappan, 1987) (p. 27). Tappan concluded that "in the post-positivistic world there is no value-neutral, objective 'Archimedean' point from which to stand and observe," therefore one is called upon to take what participants say as worthy of study and use one's abilities to understand from the participant's point of view (p. 27). For Tappan this understanding came out of direct and simple questions concerning an individual's perceptions of self development, and then dialoguing with the person to achieve depth of understanding of how the person made meaning.

Given this perspective, the literature on journals in higher education can now be examined. Since these students often are idiosyncratic and eclectic or ad hoc in their grounding, primary goals were used to categorize them.

**Development of Skills**

Fulwiler (1980) used journals to offer students an opportunity to expand their abilities as expressive writers. In addition, he sought to build community through sharing journals among students, to individualize instruction, and to stimulate discussion of course content. His use of journals encouraged students to be reflexive and to think and/or speculate when they wrote. Journals were shared and discussed in small groups. He concluded that this form of journaling encourages risk taking in both the development of form and voice in "free writing" (Elbow, 1973).

In an undergraduate English writing course, Haviland and Pittendrigh (1988) set two goals for the use of journal writing. The
first was to help students learn about themselves as writers and the second was to expand the students' abilities to use writing more effectively in other course work. The journals were shared among the students, and all students participated in Flowers' (1981) Problem-Solving Strategies for Writing. Using this tool they wrote an initial assignment describing their strengths and weaknesses and the goals for improving their writing skills. Journals were used to record the work they did on their goals as well as observations about writing in general and about "themselves as writers" (p. 84). The students were assigned to write in the journals several times a week and writing took place in class and out of class. The writing fell into "three categories: (a) responses to specific questions about the composing of a particular assignment; (b) freewritings, in which students explore their experiences and their feelings about writing; or (c) feedback reports in response to instructor comments on a finished project" (p. 84).

Students used their writing in small group discussions to consider their discoveries, any problems they had, and to come up with solutions. The groups met throughout the quarter to discuss solutions that had worked in this course and in other courses.

The conclusions based on reports by the students included a benefit in the development of solutions to writing problems, the value of learning to transfer solutions from one course to another in the area of writing, the long term impact of self discovery through the journal writing rather than the short term impact of a lecture on writing, and the appreciation for the journals as sources for a final paper.
Whitehall (1987) used the "steppingstone" exercise of Progoff (1975) for journal entries by listing headings for a dozen or so events in their lives. The subsequent assignment involved the selection of one heading and an in-depth writing. Building up a number of these writings allowed students to identify patterns or themes that become the core of a short story. The other device involved a dialogue with a person (living or dead), an object, even an assignment. The author found students motivated to write after both exercises particularly because the exercises resulted in a rich array of ideas but also "a thesis statement" (Whitehall, p. 474). The exercise of entering into a dialogue seemed remarkably suited to a connected knower but no reference was made to Women's Ways of Knowing.

Development of Personal Learning Style

Burnham (1984a, 1984b, 1982) referred to the journals written in his English Composition course for first year students as Personal Development Journals (PDJ). The design of the journals was based on the work of Perry (1970) and Progoff (1975 and 1981). Building on an earlier experience using the work of Britton (1975) and Bruffee (1980), the researcher used collaborative writing to introduce first year students to the diversity found among fellow students. This challenge to students in position 2 on the Perry scheme was balanced with the development of a community of learners who shared their writing with one another. The journals served three purposes leading to developing a sense of self. First students centered themselves within their current context or setting, next they recalled the past and those events and
people who influenced them, and finally they projected themselves into the future using an exercise in expressive writing referred to as "cinema" (p. 9) and developed both goals and plans for carrying out the goals. In final exercises they wrote in response to prompts that focus on the journal writing experience. This exercise required "higher order, formal writing" skills based on a wide range of materials written during the 14-day process.

Conclusions based on an empirical study had not been completed but the level of satisfaction was expressed by students and displayed in the papers written before and after the prompts for the reflective writing. Burnham concluded with a brief outline of a formal evaluation involving sample collections by students using the PDJ to compare with students who did not have this experience.

Clark (1981) used journal writing in an Introductory Education Psychology course and collected data from 30 students in three sections during one term and 90 students in seven sections during a second term. The goals of the journals included: the integration of practical experiences with situations of teaching and learning, and the recording, reflecting, and organizing of personal development and learning. The researcher described the journals as a combination of intensive writing based on Elbow's (1973) technique of "writing on a topic continuously for 10 minutes" (Clark, p. 23), reflective writing to organize the previous entries, and engaging in a dialogue with a peer about the insights experienced during the writing.

The journals were described as both instructional and reflective and Clark has designed a spiral bound workbook that includes instruction
on journal writing as well as blank pages for writing. Clark noted that studies reported prior to 1980 confirmed changes in cognitive and moral development in preservice teachers (Glassberg, 1978), and "powerful but simple addition(s)" (Clark, p. 27) for ego, moral and cognitive development in preservice teachers (Benham, 1979 and Oja, 1978).

The results of a questionnaire completed by 30 students at the end of the term indicated the usefulness of journals to develop a relationship between experiences in and out of class and as a source for a term paper assignment. The three instructors gained insights from the journals they kept about their teaching especially with regard to feelings and expectations they held for certain students (Clark, p. 26). There were no data reported on cognitive structural development for these students.

The use of journals in a Women's Study course as documented by Berry and Black (1987) had a broad range of goals that included: recognition of women's need for contextual reasoning, a resource for class discussions, a vehicle for supporting students who are challenged by new and conflicting ideas, an acknowledgement of the impact of developmental theory on the integration of the emotional and intellectual, and the development of feminist thinkers. A recognition of the differences between multiplicitic and contextual thinking was based on the work by Kurfiss (1983) who compared four major theories including the Perry scheme.

The researchers described the "Integrative Learning Journal" (Berry and Black, p. 62) based on the use of writing assignments that balance support and challenge to "stimulate more sophisticated
contextualist thinking" (p. 62). There were six types of entries: diary or personal reactions, notebook or reflective writing of a more critical nature in response to the course, dialogue or written exchanges with the teacher, integrative or writing that synthesized theoretical knowledge from the classroom with personal experiences, evaluative or "periodic self-assessment" (p. 63), and revisions of previous entries.

There were several pertinent conclusions: "regular feedback and careful evaluation" provided the "source of support and encouragement" that developed an "increasing sense of agency the student feels as she begins to adopt a contextualist perspective" (p. 63). The authors acknowledged that this sense of agency crucial to contextual development came out of the work of Clinchy and Zimmerman (1981). To further emphasize the value placed on the journals as a strategy for development, time for writing was allotted during the class period and the student's self evaluation of the entries were considered in the teacher's evaluations.

There were four goals in the journal writing Maas (1989) encouraged in elementary education students in a student teaching seminar. Technical competency, awareness of ethical issues, sensitivity to diversity, and the development of reflection were the focus of writing between the students and their supervisor for student teaching (p. 1). Based on the works of Yinger and Clark (1981), the supervisor wished to encourage reflective teaching through reflective journal writing while avoiding an external locus of control (Perry 3/4 split) through writing assignments. Maas noted the exclusion of the "other" in the research on journal data by Bolin (1988) and acknowledged the need
to develop a sense of trust between individual writers and himself. It was this development of trust during the 16 week term that the research saw missing in reports on journal writing. The inclusion of the development of trust led to the emergence of three categories in the students' entries defined by Maas as: (a) social, (b) emotional, and (c) intellectual writing.

The research study setting was a year long, weekly seminar that met for 2 1/2 hours and was made up primarily of preservice kindergarten teachers. By taking on the role of the trusted adult, Maas was able to enhance the sense of audience for the writer. The trust was also developed through the use of small groups that discussed structured assignments of readings to introduce topics for the seminar. The support of small groups was balanced by the instructor's selections of members for the groups that represented diversity in backgrounds. The author does not explain the criteria for the selections. As students became more vocal through the development of ideas in small groups, the large group discussion reflected "student ownership of their learning" (p. 10). Encouraging a diversity of styles in the journal writing was challenging since students came with preconceived ideas about journals in an academic setting and were slow to trust personal styles in the format and content. As diversity emerged, it "became contagious" (p. 18).

As the journal writing continued, students included the "'how' as well as the 'what' of their knowledge" seen by Maas as the emergence of what may best be described as meta-cognition or "the realities of their learning that were hidden in the busy switchboard of the mind" (p. 21).
The researcher asserts that "the social and emotional bonds established by all the language situations . . . allowed the cognitive benefits of writing to take place" (p. 21). No empirical data confirming Maas' judgments were reported.

Maas concluded that through the model of the community established in the seminar (Widick, Knefelkamp and Parker's criterion of personalness) and the roles played by students and instructors, these students changed their view of teacher "from a giver-of-knowledge to a facilitator of learning" (p. 22). The journals were essential to the development of community. During the second year, the researcher expanded options for the form the journals would take including tape recorded entries. Out of Maas' experience came a decision to return to the elementary classroom as the setting for teaching and research (from a personal letter, Nov. 10, 1990).

Development of Higher Order Thinking

The emphasis on personal development shifted in the next set of studies. While students were encouraged to use journals that promoted personal development, there was a focus on critical thinking. Jolley and Mitchell (1990) investigated the modification of journals from a format used in English composition courses to a format for a psychology course. The emphasis was on content and journals were used to think about the ideas of other people being presented in the course. The goal was to change the "dogmatic, unsupported personal beliefs" (Perry position 2 and Women's Ways of Knowing Silence and Received Knowledge) of the students and use class discussion to compare and contrast
theories that had been explored in readings and journal responses to
those readings.

The researchers entered into a three year study of interactive
journals that included feedback to correct erroneous thinking. Students
were required to make entries that displayed dialectical reasoning in a
formal structure. This seems to require Perry position 5 and Women's
Ways of Knowing Constructed Knowing responses from dualistic students.
A second set of entries used a grid system to compare and contrast two
theories. This active learning strategy gave a concrete structure to
students with the dimensions for the grid supplied by the instructors.
This design matches the criteria to help dualists think more complexly.
As the students developed in their ability to deal with diversity and
more abstract thinking, they were asked to compare and contrast theories
using their own dimensions, and extend the task to an analysis of
various dimensions, justify choices of the most important similarities
and differences, describe their stance on certain dimensions and the
dimensions that would be included in an ideal theory of their own.
Again, this seems to assure a student can move from dualism to
commitment easily.

The results of the study were primarily focused on the advantages
of systems for journal writing that facilitated the regular collection
and pertinent responses by the professor. These advantages resulted in
the benefits to students of receiving useful comments, understanding
what was expected, and accepting the fairness of a grade on the
journals. No empirical data on cognitive development was reported even
though this was the stated goal of the project.
Hettich's (1990a) concern for connected and separate knowers was reviewed in the preceding section of this chapter. In this section, his study of the use of journals to encourage more complex thinking through experiences for cognitive development is examined (1990b). The goals focused on integrating personal experiences, especially in reentry students who were older, with the facts, concepts, and principles introduced in a psychology course. The journals followed a guideline handed out the first day of class and included one long and two short entries weekly. Each entry was dated and the concepts drawn from class were underlined. There were three types of entries: (a) description of a concept, (b) application -- experimentation based on a concept, and (c) analysis, evaluation and synthesis of several concepts. It is important to note that the 'synthesis' and 'application' emphasis would assume at least a level of Procedural Knowing in the participants. Journals were evaluated for (a) "depth of thinking," (b) "variety of entries," (c) "number of entries," and (d) "quality of writing" (pp. 36-37). The journals were collected and reviewed three times during the term. Journal writing was 15-20% of the final grade. In a subsequent assignment students were directed to evaluate their journal entries based on Bloom's Taxonomy (1956). In this way, the researcher believed the students were applying a theory in a meta-analysis of their own writing.

In a study of 440 students in ten different courses in psychology, Hettich found that students were more aware of different levels of their own thinking based on Bloom's Taxonomy (1956); however, while students appeared to understand the concepts of the Perry theory
which was taught in the class, the apparent understanding did not result in advancement. It would appear that the interaction may have been above the level of the students. Hence, there was no cognitive growth.

A second study was based on a survey of 34 instructors from higher education who were selected because they had requested reprints of an earlier article by Hettich (1980). There were 20 participants in the study and 12 of those had assigned journal writing at least once in an undergraduate course. Results of the survey showed that journals should be used as a supplement to examinations and papers and not as a substitute (the researcher noted a 2.31 standard deviation in this response, indicating a wide range of opinions). Further information included the evaluation of journal writing which ranged from 10% to 100% of the final grade with a median of 25%. Finally, those surveyed reported the value of journals for self expression, a source of motivation for student involvement in the class, and to both stimulate critical thinking and serve as a monitor for student development. There was nearly a unanimous response that journals required too much time for the teachers and Hettich's recommendation was to limit the use of journals to classes of 25 or fewer students.

The final studies reviewed in the category of the development of critical thinking came out of preservice teacher education. Zeichner and Liston (1987) set goals for an elementary student teaching program that reflected their commitment to a belief that "learning, for both pupils and teachers, is greater and deeper when teachers are encouraged to exercise their judgment about the content and processes of their work
and to give some direction to the shape of schools as educational environments" (p. 24).

Journals were one of the four components to the curriculum surrounding the student teaching experience. The goals of the overall program were to encourage reflective teaching, to increase teacher autonomy, and to promote democratic ideals within educational institutions. The goals for the journals were to promote self-reflection and to serve as a system of written communication with the student's supervisor. There were specific guidelines provided by the supervisors for writing the journals. Journals were shared with supervisors who responded to entries. These entries permitted the supervisor to learn ways the students think about their experiences in student teaching, and the students' thoughts on their professional development, as well as information about the setting. The entries provided the students with information "for systematic reflection on their development as teachers and their actions in classroom and work contexts" (p. 33).

Two studies (Tabachnick and Zeichner, 1984, and Zeichner and Grant, 1981) have been done of the effect of student teaching on meeting the goals of the program. Rather than change the student teachers' view of teaching, the experience strengthened their ability to describe the view they had. Of the thirteen students in the study, ten fit this pattern. The other three displayed expected behaviors for meeting the goals but did not internalize the goals. The second study focused on changes in the student teachers' view of their relationship with students and the effect of the view held by the cooperating teacher.
There were two results. Students changed very little in the views they held going into the experience and there were no differences in the effect of the views of the cooperating teacher.

In conclusion, the authors listed ten factors that limit the effectiveness of the program in reaching the goals. Some were historical issues, including the discrepancy between risk taking on the part of the student and expectations of the cooperating teacher, the tendency of the student teacher to mimic the cooperating teacher (Perry position 2 behavior or Received Knowing behavior) and the student teacher's desire to make a good impression. Other factors had to do with attitudes the students brought to the experience, including a reluctance to take on new assignments like reflective inquiry which would take more time and the influence of their own experiences as students in a public school. Supervisors may not be fully prepared or motivated to take time away from their own graduate course work to provide for the goals. Cooperating teachers have been handicapped by lack of preparation and reward for the roles they play in meeting the goals. The structure of the program may work against the students' understanding of the goals or how to meet them due to a lack of integration. Finally, the goals may not be realistic with the expectations of the community in which the students will be teaching.

Journal as Primary Source of Research Data

Finally, in several of these studies, journals have played a predominant role as research data. Buerk (1985b), for example, quoted from student journal entries by women who were developing a voice for
making meaning in mathematics. In the conclusion of this section on the use of journals in higher education, the studies document the use of journals as the primary source of data including a variety of formats such data can take.

Feathers and White (1987) have used journals in a three month course in a college developmental reading program for students with low admission scores (15 on ACT and 749 on SAT) as well as low grade point averages from high school. The goal of the journals was to record students' development of meta-cognitive strategies in reading to improve their potential for completion of college. While this researcher acknowledges the controversy over the ability to internalize metacognition or to think about one's thinking, strategies have been taught to students so that they can successfully change their habits and improve their thinking skills.

These authors based their practice in meta-cognitive processing (Irwin, 1986). This process involved (a) knowing whether or not comprehension is taking place, (b) knowing how to adjust one's strategies to control comprehension, and (c) developing an awareness of textual, personal and situational factors affecting the adjustments.

The decision to use the students' journals as the source of research data was the belief that the journal offered a "means of getting into their heads" (Feathers and White, p. 265). A second reason for the decision was the lack of imposition in collecting data from a source that was an integral part of the course. Furthermore, these researchers saw a possibility that "journals might also promote metacognitive understanding of the reading process" (p. 265). This
researcher saw a further possibility that journals might promote meta-cognitive understanding of the developmental process.

The method for the research was a random selection of six journals by first year students representing both genders, a range of ethnic backgrounds, a range of ages from 18 to 40, and grade categories from the completed course. These students were enrolled in other developmental courses (writing and math) and two regular courses for first year students. Data included 290 handwritten photocopied entries of one to two pages in length. Analysis was done by reading all entries, entering comments on file cards, sorting the cards into categories and developing a classification system of eleven categories. The researchers mapped the number of entries in the categories, grouping them by months to see patterns in the entries. A second mapping focused on the meta-cognitive categories entered in the journals for each of the three months of the term. "Two patterns emerged: (a) patterns of types of responses across the categories, and (b) patterns of growth over time" (p. 268).

The results showed that there was no simple relationship between course grade and entries. Journal entries did not always reveal meta-cognitive analysis that was apparent in class discussions. Other entries revealed that a student was capable of higher order thinking but the term did not allow enough time for these understandings to be applied across assignments. The authors concluded that "this study [suggested] the usefulness of journal entries as a means of studying the process of learning" while noting the limitations of the data for some students.
Hutcheson and Ammon (1986) used journal data to validate interviews in a study of change in conceptions of preservice teachers at entry and graduation from a master's program involving two years of student teaching. The subjects of the study were two students who had shown considerable change. The original journal data included 50 weekly entries over two years with 10 to 210 codable items in four different journals. In the final study, two of the journals were eliminated because of limited data. The journals were written according to a semi-structured format that included descriptions of activities and goals in the student teaching situation, evaluation of improvements and considerations of the processes leading to these evaluations. Students were free to use their own format as long as it included descriptions and reflections. The researchers used the same coding scheme developed from data in the interviews and rated the students for change. The units of analysis were the sites of their student teaching. They were in three sites for 10 weeks each and two sites for 15 weeks each. The ratings ranged from (1) unusable data, (2) global or undefined data, (3) data showing constraints on learning, (4) constructed learning, (5) constraints for learning were overcome. The students whose journals were used for the comparison had moved from a predominantly stage 2 level using global or undefined responses in both interviews and journal writing to a stage 3 or 4 level of response with one or two instances of level 5 entries in the final responses.

The results of the comparison in use of journals with interviews included less elaboration in journals, negative effect of lack of elaboration on ratings, inability to code entries that were vague or
lacked supportive statements, and recognition that previous knowledge might result in entries that received higher ratings. Another result of the analysis of journals was the collapse of four categories into a single category.

Ross (1989) used ten theory to practice papers completed by a class of 26 students over a term in one course in the PROTEACH program for elementary preservice teacher education. The course was for juniors and was designed to promote reflective thinking about issues in education. The papers were kept in a journal and turned in on a regular basis for comments by the instructor. Entries that needed corrections and additional information were rewritten.

The researcher selected 134 papers that focused on five of the thirteen topic areas assigned. Twenty-five students were represented with two to nine pages of data per student. The analysis involved three steps, topical categorization and a rating of low, moderate or high level of reflection. The ratings were based on the work of Kitchener (1977) and King (1977) who have developed a seven stage model for reflective judgment which is almost identical to the Perry scheme (Rodgers, 1990). Ratings were adjusted during the third step of analysis when papers were reread as a group according to rating.

The results of the study of journal entries showed 21.6% at level 3, 34.4% at level 2, and 44% at level 1. These levels are not reflective judgment stages per se but broader definitions based upon the scheme. Although the goal of the course was an improvement in reflective abilities, the results did not show improvement. It is this researcher's observation that the cognitive developmental level of
juniors would be better matched with the topic on confirming truth than the final subject that was used in the journal entry.

Francis Bolin (1988, 1991) used journal data to develop a case study of a student during two semesters of student teaching in a graduate level preservice teacher education program. The study was designed to investigate ways for "helping student teachers think about teaching (1988, p. 48). The theories undergirding the use of journal data include Zeichner and Liston's (1987) use of journals to enhance communication between student teachers and supervisors, the possibility of transforming "ordinary thinking into critical thinking" (p. 49) based on Kuhn's (1986) study of teaching for thinking, Stanton's (1984) observations of the interaction of elementary students with their teachers in dialogue journals that promoted thinking together, and Fredericks' (1986) research on the use of journals to develop reflection in the practice of teaching. The goals for the journal writing during student teaching included finding out what the student teachers knew, what they felt, and what, why and how they did what was done.

The case study was based on qualitative methodology focused on the analysis of the journal and using analysis of interviews and other data to triangulate the findings from the journal. The journal was copied with the comments of the supervisor removed "to avoid being led by the supervisor's perceptions" and to focus on the experiences of the student teacher rather than "on the phenomenon of student teaching itself" (Bolin, p. 49). Meaning making by the individual was seen as part of a context of meaning making involving social groups surrounding the individual including the field site and the university.
Analysis was inductive, driven by the data and using Glaser and Strauss' (1967) constant comparative method. One limitation was the possibility that a personal journal or diary might be a more powerful tool for this research since the journal used was read and responded to by the supervisor.

Topics were identified over 466 units of analysis with 26% focusing on self, 24% on the children, and 15% on the cooperating teacher. The rest of the entries were on student teaching (12%), classroom activities (8%), and under 5% each for the school, the profession, the preservice seminar and others (Bolin, 1991, p. 13). In an analysis of the spring semester entries, Bolin found 77% were descriptive and 18% were reflective.

The first reading led to a discrepancy between the confident, cooperative, engaging student and "an impression of shallowness" (Bolin, 1988, p. 51) in the journal. By shifting the question being asked of the data, four areas of conflict became apparent during a second reading. The four conflicting issues included differences in personal beliefs and the setting, differences between student performance and intelligence and differences in learning styles of individual students. The ambiguity of the situation found in the journal data led to an understanding of the role the supervisor could play at the point where a problematic situation offers opportunity for development. Bolin made no mention of the cognitive developmental level or style of the student teacher but did observe that the student "may never be a deeply reflective person" (p. 53). Another observation was that lengthy conversations with the supervisor may have resulted in more reflective
talk that wasn't displayed in journal writing. The supervisor's non-judgmental style may have been another influence resulting in a lack of confrontation necessary to promote deeper reflection.

As a result of the study, Bolin concluded that the role of the supervisor could be a powerful one for change based on a thoughtfulness about what the student teacher was experiencing and guided by questions and suggestions to scaffold the change made by the supervisor. A second result was the realization that placement in a setting where the cooperating teacher was purposely mismatched with the student teacher would be best after an initial experience that is more closely matched. Simultaneously, the supervisor would need to promote a deeper analysis of the situation based on increased reflection in the student teacher.

The pilot studies for this dissertation used journal writing as the primary source of data. The setting of the first study was an introductory course in Art Education that this researcher team taught with Dr. Kenneth Marantz. All ranks (first year students through graduate students) were represented in the students and returning students extended the traditional age range beyond the late teens and early twenties. Most of the students were art education majors. The intention of the study was to gain experience in an analysis of journal data.

The descriptive study was based on the work of Maas (1989) who had uncovered three major categories in the dialogue journals designed to promote reflection in student teachers. The categories were social, emotional, and intellectual entries. At the time the pilot study was done, the researcher had been studying autobiographies as a source of
data on creativity. Focusing on the segments of the autobiographies concerning undergraduate experiences, Margaret Mead’s (1972) recollections from Chapters Eight and Nine were selected to compare with a student journal by a returning undergraduate. The selections were based on the quality of the entries and the opportunity to analyze writing by two women. The results of the study were used for a response to one of the general examination questions written in 1989. The results of the study not only showed that both students included all three categories but the responses were balanced among all three categories. Like Maas, this researcher concluded that the informality of the responses to student writing had developed a bond of trust and that it was this trust and the "social and emotional bonds established by all the language situations that allowed the cognitive benefits of writing to take place" (Maas, p. 21). An example of similar responses were Mead's observation of DePauw: "But in the setting of this coeducational college it became perfectly clear both that bright girls could do better than bright boys and that they would suffer for it" (Mead, p. 107). The student from the Art Education course wrote: "My parents have mixed feelings about my being back in school and what my goals are. My dad doesn't like his only grandchild to be in a day care situation. Just when I'm finally not feeling guilty about that he brings it up." (Norma, journal entry, 3/31/89).

The bond of the writers in a dialogue journal was particularly apparent when the voice of the student could be heard and the face of the student recalled throughout the analysis. Although this researcher's early experiences with dialogue journals reflected the role
of the respondent in a similar way to Maas, the eventual direction changed.

The second pilot study was made in a two term course for preservice teachers, Professional Introduction to Education. The researcher was an instructor for both terms and arranged for students from the first class to continue in the second class if they wished. The nine students that continued became the participants in the study. The second study had two goals. The first was the use of prompts to promote cognitive development through writing in dialogue journals. The second was the use of the cues in the writing to assess cognitive development across the two term course. Writing was done on a regular basis at the beginning of class. There were 21 prompts that asked students to describe, discuss, role-play, give examples of..., and explain various experiences real and imaginary that were related to the course or teaching/learning in general. The study was originally intended as the basis of this dissertation but a decision was made a year later to redesign the journal prompts so that they would allow sustained writing on four scenarios more appropriate for cognitive development.

The pilot study was not revised until after photocopies of the journal data were made and the Defining Issues Test (Rest, 1986) was administered as a pre-test, post-test instrument. It measured moral development and could be compared to intellectual development due to some similarity in stages. The intention was an analysis of the journals for cues similar to those Perry had found and documented in the Perry scheme (1970). These cues would be compared to the pre-tests and
post-tests given at the beginning and end of each term. Although the journal data were never analyzed, the pre-tests and post-tests were scored "for the Principled morality score," or P score (Rest, p. 3). Of the nine students selected for the study, only five of the pre-tests and post-tests were complete. Three showed a change upward in P Score (from 43.3 to 58.3, 28.3 to 36.6 and 35.0 to 45.0) and two dropped. The P Score ranged from 0 to 95 and norms for high school seniors is 31.01, for college students is 43.19, and for graduate students is 44.85 (Rest, 1986, p. 7.2). Although the pilot study was never completed, the experience of gathering and organizing data for this study was enhanced by the experience. One major difference in this pilot study and the final study was the inability to locate the research in a course taught by the researcher. This difference will be discussed in Chapter Five.

In conclusion, there appeared to be a lack of knowledge about the work of Stover (1985) and the effect of Perry's (1970) scheme and Women's Ways of Knowing (1986) as they define cognitive structure as well as connected and separate style in the designing of journals as a teaching strategy. In some cases, the design was based on a construct such as Bloom's Taxonomy but failed to consider individual student differences that could affect the student's ability to use such a construct.

The literature reviewed on journals in higher education seemed to merit several conclusions relevant to this study. First, many researchers did not ground their use of journals in any theoretical perspective. Hence, the interventions appeared ad hoc and often did not match the students' developmental needs. Mismatches were common and
theory was needed to give the concept of 'optional mismatch' substance. Other studies were grounded in the Perry scheme, the Women's Ways of Knowing study, or Kitchener and King's theories; however, the researchers seemed to observe that movement from positions 2 to 5 was easily accomplished and planned their interventions to move students all the way from position 2 to 5. This revealed a lack of depth in understanding these theories and the research on change.

More specifically, many authors recommended regular written feedback from instructors in student journals in order to be effective but 'regular' was usually not defined. The range varied from three times per week to three times per term in the literature that was specific.

Most studies recommended allocation of class time for journal entries; however, the amount of such time usually was not specified and most also used out-of-class entries. There was no agreement on the use of evaluation or credit for the writing of journals whether in class or on the student's own time. Finally, responding to student journals is time consuming, and probably journals should not be used in classes larger than twenty-five or other members of the educational profession may play a role in mentoring through dialogue journals to relieve the instructor of the responsibility of journal dialogues and assessment. See Chapter Five for further discussion.
CHAPTER III

Methodology

The Overview

The purposes of this investigation were:

(1) to determine if an introductory course in preservice teacher education which included dialogue journals employed over nine weeks containing scenarios and prompts designed to promote cognitive development result in increased cognitive development;

(2) to determine if student responses in the journals can be used to assess cognitive structure as defined by Perry (1970) and to identify cognitive style as defined by Belenky, Clinchy, Goldberger, and Tarule (1986).

The participants in this study were undergraduate students enrolled in Art Education 225: Introduction to Art Education. Cognitive development was measured by pre-tests and post-tests using the Ethical Reasoning Inventory (ERI) (Bode and Page, 1980) and the Measure of Intellectual Development (MID) (Knefelkamp, Widick, and Slepitz, 1976). The same criteria used to rate the MID was used to determine if
student journal responses could be rated in terms of the Perry positions. Attributes describing separated and connected knowing in Women's Ways of Knowing (1986) were used to determine if students' journal responses were ratable for separate and connected style. In this chapter the MID and ERI instruments are described, scoring is explained, and information on validity and reliability are covered. The diagnostic scheme based on criteria for rating the MID was used for rating the journals for cognitive change during the nine week period. This diagnostic scheme is described. The categories for identifying preferred cognitive style were developed by the researcher based on attributes listed in Women's Ways of Knowing. The development of these categories is described.

The Participants

Students in Art Education 225: Introduction to Art Education at The Ohio State University participated in writing the dialogue journals with the researcher during fall quarter of 1991. There were 24 student participants. They ranged in age from 19 to 40. There were 38% at ages 19 and 20, 33% at ages 21 and 22 and 29% at ages 24 to 40. There were 10 men and 14 women. One participant self identified as Afro-American, one self identified was Vietnamese and 22 described themselves as white or caucasian. All the students had some art courses in the public schools they attended. Students self reported the size of their graduating classes as 14 members to 630 members. They self-reported current GPA's ranging from 2.00 to 3.80. Most expected to go into teaching in public schools.
This study was limited to art education majors. Having done pilot studies with art education students and general education students, this researcher is aware that the two groups of students are different in some ways. For example, many of the art education students were art majors in high school, resulting in the use of the school day for advanced studio courses or independent studies in visual art. While results of this study may be transferable to some introductory preservice teacher education courses, a careful analysis and comparison of both the students and the course design will be required.

The Course

Art Education 225: An Introduction to Art Education is offered every quarter and is team taught by a senior faculty member and a graduate student who serves as a teaching associate. The course is designed to expand the concept of art education (e.g., museum education, art therapy, art education in institutions for special populations of children and adults) for students whose experience is usually limited to public school art education. Course content is designed by the teaching team and has two major components: (a) readings selected from a wide range of publications both professional and popular dealing with current and historical issues affecting the arts in general and visual art education in particular, (b) reading specific to field site visitations. The teaching team was made up of a senior faculty member (Dr. Kenneth Marantz) and a teaching assistant (Ms. Cheryl Williams). A different field site is visited each week and the art educator at the site explains his/her responsibilities for those using the site. Sites
include: a psychiatric hospital, a senior citizen center, a visual arts center run by the city parks and recreation department, a museum, an institution for delinquent boys, and a school for the deaf. Class time is also used for experiences designed for "art-making" activities to expand the development of concepts and language for understanding art and art-making. For example, students were required to design, illustrate and make a handbound picture book based on a character and story Dr. Marantz gave the students. During the academic term students usually are required to attend an art gallery, to interview family and friends about art collecting or appreciation, and to survey the general public in order to determine their views on art education.

Students are required to take part in class discussions, write reports on readings, surveys, interviews, field trips, and other assignments outside of the classroom that introduce them to a greater understanding of the profession. Each student is required to turn in a final project that usually consists of a handbound book based on a theme that has been explored by the student as an independent study under the direction of the teaching team. Instruction in the process of book binding is a part of the experiential curriculum described above. Students are encouraged to help one another with collection of information and the production of the final project which is presented to the class through a brief report at the end of the quarter in place of a final examination. Final evaluation is based on a portfolio that includes all class assignments, notes, and the handmade book that documents the final presentation. The course syllabus, course materials and samples of handouts are found in Appendix C.
The Dialogue Journal

Dialogue journals are journals that are written by two people. In this case, the study was designed to develop context-specific working hypotheses about the use of dialogue journals to assess and promote cognitive development. Examples of such outcomes of this study might include: (a) would a single strategy for cognitive development have an effect on cognitive development, (b) would another voice of authority (the researcher) deter cognitive development in position 2 students, or (c) what qualities would be necessary and sufficient to assess cognitive structure and cognitive style? Furthermore, this researcher believes such hypothesis generation is specific to the setting of the study but may have the potential for transfer to other settings, so hypotheses generated by this study may be limited to the context of this study.

The journals used written responses by the researcher and the students in a series of dialogues in an attempt to promote cognitive development over a nine week period. The scenarios, prompts, and written reactions to student responses were designed to promote cognitive development using criteria developed by Widick, Knefelkamp and Parker (1975), Widick and Simpson (1978) and Knefelkamp and Slepitz (1978). There were four scenarios: (a) describe an unsatisfactory course and the teacher for the course, (b) describe the content of an art course you have taken, (c) describe preparing to write a critique on an art reproduction for your hometown newspaper and the key issues you would include, (d) describe and give reasons for any other choice for a career in art education besides being an art teacher in a public school. Prompts were the comments or questions to the responses that continued
the dialogue. In some cases, the researcher wrote reactions or asides to the responses. The criteria from the studies to promote cognitive development guided both the supports and challenges that are believed to promote increased cognitive complexity on Perry's (1970) scheme. There are a variety of supports and challenges for promoting cognitive development which are described below. Briefly, supports are prompts that were written at the developmental level of the student's response as interpreted by the researcher at the time of writing. Challenges are one or more (1+) positions higher than the developmental level of the student as interpreted by the researcher from the written response. The relationship of the various combinations of prompts and responses will be the focus of a future study described in Chapter Five.

Studies of cognitive development in the past have separated the students into relatively homogeneous groups based on Perry positions so that the entire course could focus on students at the dualistic stages (Perry's Stages 2 and 3) or relativistic stages (Perry's Stages 4 and 5). When students were not separated, the curriculum tended to focus on the lower stage students as reviewed in Chapter Two. The use of the dialogue journals in this study was an attempt to individualize the course so that the differences in instructional needs of both dualistic and relativistic students could be addressed within a class that had not been preselected for Perry position.

In Tables 1 and 2 the criteria for promoting cognitive development based on the Perry Scheme are presented to show the differences in the way a teacher challenges and supports students at the dualistic stages (Perry positions 1-3) and the multiplistic stages
(Perry positions 4-5). The use of dialogue journals allowed the researcher to individualize the prompts to students especially during the last phase of writing as students exhibited tendencies toward dualism or multiplistic ways of thinking. The five dimensions for either challenging or supporting undergraduate students differ in the criteria used for dualists and multiplists.

For example, the dimension called diversity of views refers to the number of points of view an instructor introduces on a given topic. In order to promote development in students who reason dualistically, two or three options need to be introduced, not more than three. For multiplistic students, two, three, or more points of view may be used. Teachers support dualists with a high degree of structure in assignments and the organization of class time. This structure should be defined in advance by the instructor. In contrast, with multiplistic students teachers need to allow students to structure their own learning in order to foster their development. Dualist students are challenged when they encounter various points of view concretely or experientially. They tend to memorize and not change cognitively when material is presented abstractly. On the other hand, multiplistic students are challenged to become more complex thinkers when material is presented abstractly or concretely. Both dualistic and multiplistic reasoners appear to need the support of a personal, trusting atmosphere. Some dualists show signs of discomfort and animosity if the teacher is too friendly, however. On the other hand, multiplistic students seem to welcome a sense of camaraderie with the authority. Finally, the processing of learning experiences needs to emphasize differentiation or the opening
Table 1

Criteria for Promoting Cognitive Development in Stages 1-3 (Dualism)

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Challenge</th>
<th>Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diversity of Views:</td>
<td>encounter 2 or 3 views</td>
<td></td>
</tr>
<tr>
<td>Degree of Structure:</td>
<td></td>
<td>high degree provided by the authority</td>
</tr>
<tr>
<td>Degree of Abstraction:</td>
<td>low degree of abstraction;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>use concrete and experiential</td>
<td></td>
</tr>
<tr>
<td></td>
<td>strategies</td>
<td></td>
</tr>
<tr>
<td>Degree of Personalness:</td>
<td></td>
<td>moderate to high personalness</td>
</tr>
<tr>
<td>Processing information:</td>
<td>emphasize differentiation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>rather than</td>
<td></td>
</tr>
<tr>
<td></td>
<td>integration</td>
<td></td>
</tr>
</tbody>
</table>

Table 2
Criteria for Promoting Cognitive Development in Stages 4-5

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Challenge</th>
<th>Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diversity of Views:</td>
<td>encounter 2, 3 or more</td>
<td>low degree of structure, options for student choices</td>
</tr>
<tr>
<td>Degree of Structure:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Degree of Abstraction:</td>
<td>high degree of abstract ideas</td>
<td></td>
</tr>
<tr>
<td>Degree of Personalness:</td>
<td></td>
<td>high degree of personalness</td>
</tr>
<tr>
<td>Processing information:</td>
<td>emphasize differentiation and integration to move to commitment</td>
<td></td>
</tr>
</tbody>
</table>

of legitimate options for dualists and both differentiation of options and integration or narrowing toward commitment for multiplistic students.

Parker (1975) and Widick and Simpson (1978) suggest it is useful to see differences in the ways authorities view situations. The multiplistic student is being encouraged to select a point of view and commit to it; hence, the teacher points out differences in the options, the possibilities of integration, and the need for commitment to a less than perfect option. Integration refers to the student's ability to combine parts of options into a new whole. This is particularly important for bringing together personal knowledge and academic knowledge so that there is a sense of ownership for knowledge. Commitment refers to the student's ability to select and devote herself to that point of view as her own. The processes of integration and commitment are described in Perry's positions 6 through 9 (Perry, pp. 134-176) and in "constructed knowledge" in Women's Ways of Knowing (Belenky, Clinchy, Goldberger, and Tarule, pp. 131-152). As indicated previously, these positions are not cognitive-structural. They appear to be more psycho-social processes.

The dialogue journals were also designed to promote cognitive development through prompts to evoke examples of connected or separate cognitive style based upon Women's Ways of Knowing. Although these investigators introduced the concepts of connected or separate learners at their position 4, Procedural Knowledge, Baxter Magolda (1990) found that similar styles could be identified in Perry positions 2 and 3. Hence, in this study connected and separate style interventions were
attempted for students at all Perry/Women's Ways of Knowing levels and
the study was concerned with the question of whether the journals would
contain information that would allow the instructor to assess each
student's preferred style. The attributes of separate and connected
knowers are described in detail in the section of this chapter on
criteria for rating journals based on Women's Ways of Knowing.

The Scenarios

As indicated previously, there were four scenarios created for
the dialogues in the journals. The four scenarios were based on the
pilot study done by the researcher in 1988-1989, while team teaching the
Art Education 120/189: An Introduction to Art Education (now Art
Education 225) with Dr. Kenneth Marantz and the pilot study done in
1989-1990, while teaching Education 450-451: Professional Introduction,
in the College of Education. The complete scenarios are as follows:

Scenario #1: "We are often asked to describe exemplary teachers
and courses we have taken, but it might be equally valuable to
investigate a situation that was unsatisfactory for you as a learner.
Briefly describe the most unsatisfactory course and the teacher in that
course that you have had. Please identify the context: elementary
school, junior high school, senior high school, or college?"

Scenario #2: "I expect that you had courses in art during
school, perhaps you were identified as an art major. Would you briefly
describe the content of the art courses you took, e.g., studio
production, art history, art appreciation? What did you think/feel
about the content? If you did not have art courses in school, describe
experiences in other settings (camp, Scouts, church school, park or recreation classes) with art content."

Scenario #3: "Imagine that you have been asked to write a criticism of a reproduction of a work of art for your hometown newspaper. Describe briefly how you would go about preparing for the assignment and what key issues you would include in the criticism."

Scenario #4: "During this course you are being exposed to a wide range of possibilities for careers in art education. If you were to choose any career besides being an art teacher in a public school, which would you choose? Briefly describe your reasons for the choice."

The criteria for designing the scenarios included:

(a) consideration of class content,

(b) a structure for the dialogues,

(c) potential for cognitive role taking through questions posed in prompts,

(d) potential for introducing multiple perspectives on the situation described in the scenario,

(e) opportunity to examine the role of authorities,

(f) opportunity to respond to a particular context,

(g) potential for personal interactions and authority self-revelations through shared experiences between researcher and students, and

(h) potential for using either dualistic or multiplistic change criteria and connected and separate style in responding to the students.
In the pilot studies, the format for journal writing evolved over time. The first pilot study involved journals that were more like diaries and had very little structure with minimal input from the researcher. The second pilot study evolved to dialogue journals based on specific questions from the researcher that were responded to by the students with some follow-up dialogue between the student and the researcher. The dialogue journals in this study differed by concentrating on four scenarios with five to eight weeks of continuing the dialogue within the four scenarios. This change was brought about by the findings on the research concerning the conditions that promote cognitive change. The research indicates that interventions that promote change take place over extended periods of time, using appropriate challenges and supports repeatedly and continually, often on a variety of topics. Single event interventions or short term interventions (less than six weeks) do not appear to be sufficient to promote change.

The scenarios were introduced one each week during the first four weeks of journal writing. Table 3 displays the schedule. The written dialogue on each scenario continued throughout the term. The researcher attempted to use stage appropriate criteria to facilitate cognitive development and the attributes of either connected or separate learning styles in responding to and challenging each student.

The journal entries were made during the first 15 minutes of class once a week. Journals were returned with the prompts one to two days before writing was scheduled to allow students additional time to respond outside class time and to consider the prompts before responding
in class. Hence, the participants had a minimum of 15 minutes to write their response in class, but could use as much time as they desired outside of class. In the pilot study students were allowed 15 minutes at the beginning of nearly every class for journal writing but in this study time was limited to once a week by the teaching team.

The journals are handbound blank books that the students made under the direction of the researcher in the second week of this study. This experience of making the books was useful to the study in several ways. The students had an opportunity to work with art materials; the students may have developed a sense of ownership through making the books rather than buying notebooks; and the process prepared the students for their final project in the course. The process of making the books was also an opportunity for students and the researcher to meet in a more informal atmosphere and to develop their relationship prior to the experience of writing in dialogue.

The Prompts

The journals were read and returned to the students during class prior to the next scheduled writing time so that they could read the prompts and reflect on their next response. Prompts were designed to promote the dialogue through the use of references to personal experiences the students described in their responses. As the researcher became more familiar with the students' cognitive structure, those who appeared to be at the multiplistic stage were supported with the use of appropriate criteria such as a high degree of personalness.
Table 3

Schedule for Pre-tests, Bookmaking Workshop, Journal Writing, and Post-tests

<table>
<thead>
<tr>
<th></th>
<th>Week 1</th>
<th>Week 2</th>
<th>Week 3</th>
<th>Week 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td>Bookmaking</td>
<td>Scenario #2</td>
<td>Scenario #3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scenario #1</td>
<td>#1--1st prompt</td>
<td>#2--1st prompt</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>#1--2nd prompt</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Week 5</th>
<th>Week 6</th>
<th>Week 7</th>
<th>Week 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scenario #4</td>
<td>#4--1st prompt</td>
<td>#4--2nd prompt</td>
<td>#4--3rd prompt</td>
<td></td>
</tr>
<tr>
<td>#3--1st prompt</td>
<td>#3--2nd prompt</td>
<td>#3--3rd prompt</td>
<td>#3--4th prompt</td>
<td></td>
</tr>
<tr>
<td>#2--2nd prompt</td>
<td>#2--3rd prompt</td>
<td>#2--4th prompt</td>
<td>#2--5th prompt</td>
<td></td>
</tr>
<tr>
<td>#1--3rd prompt</td>
<td>#1--4th prompt</td>
<td>#1--5th prompt</td>
<td>#1--6th prompt</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Week 9</th>
<th>Week 10</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>#4--4th prompt</td>
<td>post-test</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#3--5th prompt</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#2--6th prompt</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#1--7th prompt</td>
<td></td>
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</tbody>
</table>
Prompts often asked students to take on different roles from their original point of view. These roles might include a teacher, a principal, a peer teacher, a student, a parent, or a citizen in the community. The roles were limited to two or three for each scenario and offered an opportunity to use role taking as a means of experiencing different points of view in order to challenge the dualistic or multiplistic student. Since the role taking was limited to a point of view from which responses were written, the students did not act out or role play.

Although the journal writing was structured around the prompts and responses, students were not required to write, were not graded on their writing, and were given the option of bringing up issues that came up in class or in the researcher's comments to specific information in their responses. In this way, dualists who needed structure could write within the structure of prompts and responses in each of the scenarios for each week. Multiplistic students were not penalized if they chose to restructure the schedule for writing.

Although the scenarios were designed to encourage writing based on concrete experiences that the student could report from memory, two of the prompts allowed for more abstract thinking: (a) the art critic role and (b) choosing a career other than public school teacher. Using the art critic role as an example, students who had difficulty explaining the abstract bases for critiques of works of art were encouraged to use a low degree of abstraction in their descriptions—color, line, pattern, use of light and dark areas. Multiplistic students who responded with more abstraction to prompts were challenged
to extend the abstractions to discuss social and political issues that might arise with their choices of reproductions of works of art including gay/lesbian issues, feminism, nudity, and public funding of the visual arts.

The use of role play challenged the students to differentiate among various points of view. The scenario that allowed students to explore career choices challenged the dualists to look at a variety of options. As multiplistic thinking in some students appeared in their writing, these students were challenged to look at choices and begin the process of committing to a choice. This was done by suggesting connections between earlier entries and the skills and interests needed for certain career choices. This was one way students were challenged to integrate personal knowledge and academic knowledge as they worked toward commitment not only in career choices but in other aspects of their lives.

The responses to the prompts also provided a base for ascertaining cognitive style. While the researcher's preferred style is connected learning, she took on a more confrontive role with some students who appeared to prefer a separate learning style. Examples of various prompts are reported in Chapter Four.
Measure of Cognitive Development:
The Measure of Intellectual Development (MID)

Description of the Instrument
The MID has evolved out of the work of Knefelkamp, Widick and Parker (1975). The instrument requires participants to produce written reasoning responses to two essay questions, one as a pre-test and one for the post-test. For this study the two essays were prompted by the elaborations on these statements: "describe the best course you've taken in high school or college" and "describe a course that would represent the ideal learning environment for you".

Description of the Rating System
The instrument is protected by copyright and only qualified raters can score the instrument. Ratings are done by two raters and the results of the ratings are reported as the stage (1-5) of cognitive development using the numbers of the positions from the Perry Scheme. The positions are rated using eight categories:

(a) View of Knowledge and Learning
(b) Role of Authority/Teacher
(c) Role of Learners/Peers
(d) Language Usage
(e) Multiples/Quantity
(f) Atmosphere
(g) Role of Evaluation
(h) Position Specific Cues (Smith, 1983, p. 98)


The process for rating the essays involves the use of a coding system by raters who are thoroughly familiar with the Perry Scheme. Thus raters read the essay in its entirety in order to gain an idea of the "underlying cognitive structure" (p. 94). These cognitive structures include dualistic, multiplistic and relativistic perspectives. Criteria for each stage are specified in a manual and each criterion is considered in isolation from other categories and their criteria. Criteria sheets for the eight categories listed above are used to record evidence of specific positions. A cue is the word or phrase that indicates a cognitive perspective and allows the rater to make a decision about the underlying cognitive structure. Since people can and do use stages they have already passed through and since people also often are in transition between two stages, cues from more than one stage often appear in the ratings of a given individual. Hence, most of the written responses to the MID prompts display at least two stages, usually adjacent stages.

Scoring may be presented as a three-number rating or as a continuous number between one and five. See Table 4 for the relationship of the three-number rating and the continuous representation. For example, the three number rating of 223 indicates that 2/3 of the responses were at position 2 and 1/3 at position 3. A continuous score of 2.33 represents the same person. As indicated in the table, the MID is sensitive to changes of 1/3 of a stage.
Most scholars believe that responses beyond position 5 are psychosocial and not cognitive (Mentkowski, Moesser, and Strait, 1983).

Table 4

The Relationship between Perry Positions and MID Scores

<table>
<thead>
<tr>
<th>Dualism</th>
<th>Multiplism</th>
<th>Contextual Relativism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stable/Transition</td>
<td>Stable/Transition</td>
<td>Stable/Transition/Stable</td>
</tr>
<tr>
<td>222 223 233</td>
<td>333 334 344</td>
<td>444 445 455 555</td>
</tr>
<tr>
<td>2.0 2.33 2.67</td>
<td>3.0 3.33 3.67</td>
<td>4.0 4.33 4.67 5.0</td>
</tr>
</tbody>
</table>


Knefelkamp (1973), Rodgers (1980), Widick (1974), Magolda (1988) interpret the Perry positions as having two parts: the cognitive or intellectual part is in positions 1-5, and the psychosocial or ethical part is in positions 6-9 and involves processes of commitment (Smith, 1983, p. 56).

A further consideration needs to be made about the nature of the MID and the ERI. In the MID, students respond to the essay question by spontaneously producing their own reasoning. That is, they have no examples from which to choose for their answers. In contrast, the ERI (which will be explained shortly) gives both the stimulus and possible
response choices to the students who select one that is recognized as being closest to their own way of thinking. This distinction between production and recognition instruments is important because research indicates (Rest, 1979) that subjects are able to recognize and select stages higher than they can produce spontaneously. Hence, recognition instruments (such as the ERI) tend to rate persons higher than production instruments (such as the MID). Both kinds of measure, however, can be used to measure change. The MID measures cognitive production ability and the ERI measures cognitive recognition preferences. Both were used to measure change in this study.

Reliability of the Instrument

Reliability of the MID as a measurement of Perry positions is made in three ways: (1) correlations with interview ratings were .74 in a study by Slepitz (1976) and .76 in a study by Wertheimer (1976); (2) correlations with expert raters were .73-.87 in a study by Allen (1982) and .74 in a study by Mentkowski et alia (1983); and (3) inter-rater agreement was .82 in a study by Stephenson and Hunt (1977) and .87 in a study by Allen (1982) and .67 in a study by Fitch (1982). In addition extensive use of the instrument has been made at Alverno College and the University of Maryland where dominant position agreement was reported at .76 by Mentkowski, Moeser, and Strait (1983) and .83 by Moore (1983).

Recent data (Moore, The Measure of Intellectual Development: An Instrument Manual, no date given) on inter-rater reliability is based on studies from May, 1984 through May 1986, during which time 1244 essays were rated by CADI raters: "... absolute agreement percentage of
51.2%; the percentage of ratings within 1/3 position was 93.6%" (Moore, p. 15). Each rater gives a three number rating, for example 222 would be a stable stage 2 while 232 would indicate transition between stage 2 and stage 3 and 233 would indicate a transition that is moving even closer to stage 3. A pair of ratings within 1/3 agreement would indicate that of the three numbers there was agreement on 2 of the 3 and disagreement on 1 of the 3. Therefore pairs of raters had absolute agreement (e.g., 232) on the rating of these essays over the 50% mark and there was over a 90% agreement within the three digit rating (e.g., one rater gave the protocol a rating of 232 while the other gave a rating of 233).

Validity of the Instrument

"A variety of approaches have been used to report validity with respect to the MID" (Smith, p. 91). Smith reports on the various categories for validity based on Moore (1983) and the prospectus for the instrument published by the Center for Applications of Developmental Instruction (CADI, College Park, MD, 1982). The categories include (1) comparison with other constructs and developmental models, (2) face validity, (3) criterion group difference, and (4) experimental enhancement studies. These studies illustrate the use of the MID as a pre-test and post-test measure to examine differences related to developmentally designed classroom experiences.

There was a .51 correlation in a study by Widick (1975) between the MID and the Paragraph Completion Test by Schroder, Driver, and Streufert (1967) which is a measure of conceptual level. There was a
.45 correlation in a study by Meyer (1977) between the MID and the Defining Issues Test by Rest (1973) which is a measure of moral development. There was a .30 correlation in a study by Wertheimer (1980) with the Sentence Completion Test by Loevinger, et alia (1970 which is a measure of ego development. Hence, there appears to be relationships between intellectual development and these other cognitive phenomena; however, intellectual development is not the same as the other phenomena.

Moore (1983) points out that the MID gives face validity to the Perry model. The MID focuses on classroom learning and "student-generated, open-ended responses similar to Perry's study involving student discussions and "meaning-making in the classroom" (p. 3).

Criterion group differences showed an average for first year students at Perry position 3.24 and for seniors at 4.16 in a 1977 study by Meyer. A second study by Knefelkamp and Slepitz (1976) indicated that first year students and sophomores were at positions 2 and 3, seniors were at positions 3, 4, and 5. First year master's candidates were also at positions 3, 4, and 5 while advanced graduates were at position 6 and 7. A third study by Allen (1982) indicated that first year students and sophomores were at 2.72 position (or between 2 and 3 but closer to 3) and juniors and seniors were at 2.91 (a slight gain toward position 3). Phillips (1982) found college of education students at position 2 in their sophomore year and at position 3 as seniors. Rodgers (1974-1990) reported 14 years of studies of new graduate students in higher education. Master's candidates, mostly in their 20's, scored mostly at position 4, with a few at positions 3 or 5.
Doctoral candidates scored mostly at position 5. To sum up, Smith (1983) says, "these cross-sectional studies showed group differences that are predicated by the scheme and measured by the MID, a true reflection of the ability of the scheme to account for the growth of cognitive development during the college years" (p. 92). Again, this researcher noted that the findings in the Phillips (1982) study of a lower gain from findings in 1977 and 1976 was reflected in the Allen Study of 1982.

In experimental enhancement studies, the MID was used as a pre- and post-measure to examine the differences related to developmentally designed classroom experiences. In a study by Touchton, Wertheimer, Cornfield, and Harrison (1977) using the Knefelkamp-Slepetza (1976) career development model to design classroom interventions the following changes were found: .76 in the experimental class increased in Perry position while .41 in the control group showed an increase (Smith, p. 92). Chapter Two presents a more extensive review of studies using cognitive developmental strategies in higher education and including setting, participants, the strategies used and the outcomes.

Measure of Cognitive Development:

The Ethical Reasoning Inventory (ERI)

Description of the Instrument

The Ethical Reasoning Inventory (ERI) was used as a second measure of cognitive development in this study. Moral and intellectual development are related but distinct cognitive phenomena (Kuhmerker,
1991). The Ethical Reasoning Inventory was designed by Bode and Page (1978) to measure moral reasoning based on Kohlberg's (1974) theory. It was designed to "circumvent some of the problems associated with the interview (e.g. time-consuming administration, transcribing of protocols for scoring, etc.)" (Bode and Page, 1980, p. 115) and to include features such as "quick and easy group administration; a recognition task for objective scoring (manually or by machine); and an index equivalent to the moral maturity score of the MJI [Moral Judgment Interviews]" (p. 115).

There are 26 questions in the ERI involving the same six dilemmas used in Kohlberg's 1974 version of the Moral Judgment Interviews (MJI). Of the 26, 14 involve branching questions where the respondent is asked to make a yes/no choice and depending on the answer is requested to make a follow up decision from answers that represent the five stages in Kohlberg's theory of moral development. The questions are the same as those asked in the 1974 version of the MJI. The choices also include two other categories: "nonsense statements (to check for careless or random answering) and abstract [but meaningless] statements (to check for endorsement of complex-sounding statements)" (Bode and Page, 1980, p. 141). The instructions for the respondent take into consideration the possibility that none of the choices exactly fit his or her beliefs by asking for a choice of the response that comes the closest to his or her beliefs.

Several other considerations have been taken into account in the design of the ERI. Among these are horizontal decalage, age trends, faking good or bad results, and the influence of academic content on
respondents. Horizontal decalage is the Piagetian concept that refers to a person's use of a given way of reasoning across several content areas within a given stage. This phenomenon is reflected in the question whether or not there was a "clustering of responses at more than one stage" (p. 142). Clustering at one stage indicated that the respondent has not internalized the next stage but may be developing across (horizontally) experiences to apply a given stage. For example, students may be able to use relativistic reasoning in their academic work but continue to use multiplicitic reasoning in personal differences with roommates.

Research on age trends, as expected, shows higher developmental stages with increased age. In one study (Page and Bode, 1979) respondents were asked to answer as if they would be chosen for a job if they answered with either the "best or the worst ethical reasoning on the test" (Bode and Page, 1980, p. 146). Generally, it was found that students could fake a lower stage but not a higher stage. Page and Bode also studied a group of students in a course that "emphasized the logical analysis of normative ethical positions" (p. 146) and a control group in an introductory psychology class in which the topic of moral development was not taught. Results indicated that the "ERI is sufficiently sensitive to measure induced changes in moral reasoning and that a course in the analysis of historical ethical positions will induce development within the Kohlbergian framework" (Bode and Page, p. 147).
Scoring of the Instrument

The ERI is hand scored using a scoring key. Typically respondents use an answer sheet which is separate from the instrument itself. In this study, however, the researcher hand scored the ERI pre-tests and post-tests using the scoring key. The responses to the instruments were entered on the answer sheets by the researcher. The decision by the researcher to do the scoring for the students was based on a belief that the participants would be more likely to complete the instrument on their own time if they understood that the researcher would do the scoring.

Table 5

Two Examples of Mean Stage Scores for the ERI

<table>
<thead>
<tr>
<th>Subject</th>
<th>N</th>
<th>A</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>9</td>
<td>10</td>
<td>5</td>
<td>3.69 (based on 26)</td>
</tr>
<tr>
<td>B</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>4</td>
<td>13</td>
<td>5</td>
<td>3</td>
<td>3.28 (based on 25)</td>
</tr>
</tbody>
</table>

The mean stage score is an average of the responses based on the number of responses multiplied by the number of the stage divided by the total number (26 responses possible) of responses and excluding the nonsense and abstract responses. See Table 5 for two examples of scoring.
Reliability of the Instrument

The reliability of the instrument is shown in the high level of internal consistency of the ERI. Page and Bode tested for "item-total correlations (treating each dilemma average as an item). These ranged from .12 to .52 with a median of .49; the Cronback Alpha for the six dilemmas was .69 and was improved to .74 by deleting the least related dilemma (No. 4 on euthanasia)" (Bode and Page, 1980, p. 143). Furthermore "taking each of the 26 responses as separate measures resulted in item-total correlations ranging from .08 to .60 with a median of .28; the Cronback Alpha was .75 and was improved slightly to .77 by deletion of the least related item (item 16 in the fourth dilemma)" (p. 143).

Test-retest reliability as evaluated on three sets of data resulted in (a) a Pearson product-moment correlation of .69 with an interval of 10 days and 51 subjects, (b) .80 correlation with an interval of seven days and 54 subjects, and (c) .69 correlation with an interval of 10 weeks and 40 students (p. 143). The authors note that "group means did not differ significantly over any of the intervals" (p. 143).

Validity of the Instrument

In correlating the ERI with other instruments designed to measure moral reasoning development, there was a cumulative correlation of .56 between the MJ1 and the ERI using both high school and college samples. Table 6 gives the correlations for the other studies done exclusively with college students. As indicated in these results, the ERI has
higher correlations with Kohlberg's Moral Judgement Interview (MJI) than the Defining Issues Test (DIT) or the Moral Judgment Scale (MJS). In addition, the ERI uses exactly the same stimuli and questions as the 1974 version of Kohlberg's interview. The DIT and MJS do not.

The Criteria for Rating Dialogue Journals: Perry Scheme

The rater of Perry levels in the dialogue journals, Dr. Robert Rodgers, used criteria for the MID to rate the journal materials. Sections of the student responses in the journals that were ratable were identified and then scored for Perry positions. In doing this task, each student's written responses were analyzed for lines of reasoning. These were identified. The rater then used the MID rating criteria to rate each line of reasoning. These ratings were compared with ratings on the MID and the ERI to triangulate the findings of the journal data. Results of the ratings and the comparisons are described in Chapter Four.

The Criteria for Rating Dialogue Journals: Ways of Knowing

The second set of criteria for rating the dialogue journals was based on Women's Ways of Knowing (Belenky, Clinchy, Goldberger, and Tarule, 1986). Table 7 lists the attributes of connected and separate knowing as they appeared in the interview data described in Women's Ways of Knowing. This researcher organized the attributes in parallel fashion where it was possible. For example, separate learners prefer debate and separate self and one's view in learning. In contrast,
### Table 6

**Pearson Correlations Between Measures**

<table>
<thead>
<tr>
<th>Measure</th>
<th>MJI</th>
<th>ERI</th>
<th>DIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>MJI</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ERI</td>
<td>.54**</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>DIT</td>
<td>.50**</td>
<td>.57**</td>
<td>---</td>
</tr>
<tr>
<td>MJS</td>
<td>.26*</td>
<td>.43**</td>
<td>.26*</td>
</tr>
</tbody>
</table>

*Note. *p < .02. **p < .001.*

*Note. P score is index used for DIT.*

connected learners prefer to establish trusting relationships and then to use discussion and personal narratives in learning. In the first case there is always the attempt to remain objective but it comes out of a sense of the separation of self from other in a debate. In the case of the connected knower, there is still an effort to remain objective but knowing comes out of understanding the other empathically through a discussion which may or may not lead to a new sense of truth.

Neither style is exclusive to gender and the use of both styles by women is documented in *Women's Ways of Knowing*. Most women in the study preferred the connected style. As some women moved into constructed knowledge or position 5 in the Perry scheme, they attempted to integrate feeling and reasoning and honored intuitive thought. The authors acknowledge that men may exhibit connected knowing although they do not document men's use of it since they studied women exclusively. This study offers an opportunity to look at data generated by both men and women.

The design of the prompts required the researcher to shift to either connected or separate style in order to match the voice of the student. Although this study will not focus on the interactions of the dialogue, examples of differences in prompts and responses will be given to elaborate on bases for assessing style. See Chapter Four for these examples.
<table>
<thead>
<tr>
<th>Separate Knowers</th>
<th>Connected Knowers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Separates from object of learning and other learners in order to make impersonal judgment.</td>
<td>1. Relationships are and need to be established between knower and object and other learners.</td>
</tr>
<tr>
<td>2. Emphasizes criticism of views.</td>
<td>2. Emphasizes acceptance of views and slowness to judge views.</td>
</tr>
<tr>
<td>3. Evaluation is prominent.</td>
<td>3. Understanding is prominent over criticism or evaluation.</td>
</tr>
<tr>
<td>4. Stands back from the context and attempts to be objective.</td>
<td>4. Enters other’s frame of reference in order to discover premise for point of view, to help draw inferences, and use inferences to make judgments rather than be directly critical.</td>
</tr>
<tr>
<td>5. Emphasizes mastery of the object and of other learners, even if some equality exists.</td>
<td>5. Emphasizes understanding the object and equality with other learners even if some differences exist.</td>
</tr>
<tr>
<td>6. Prefers to quantify the object of learning.</td>
<td>6. Prefers to understand the meaning of the object under study in a personal way.</td>
</tr>
<tr>
<td>8. Appeals to rules, laws, procedures, or principles to adjudicate situations.</td>
<td>8. Uses inferences to adjudicate situations indirectly.</td>
</tr>
</tbody>
</table>
Table 7 (continued),

<table>
<thead>
<tr>
<th>Separate Knowers</th>
<th>Connected Knowers</th>
</tr>
</thead>
<tbody>
<tr>
<td>9. Considers others as &quot;I&quot; want to be considered in that situation.</td>
<td>9. Wants to respond to others in other's terms not one's own.</td>
</tr>
<tr>
<td>10. Separates self from views, separates criticism of ideas from criticism of self, non-ownership of presented ideas.</td>
<td>10. Has difficulty separating self from views and prefers to keep knowledge on a personal basis.</td>
</tr>
<tr>
<td>11. If female, violates and resents conventional feminine stereotypes.</td>
<td>11. Sees strengths in female ways of knowing and encourages others in these ways.</td>
</tr>
<tr>
<td>12. Questions and doubts other's views as a way to improve own views.</td>
<td>12. Enters learning by accepting everything authority says is true.</td>
</tr>
<tr>
<td>13. Puts ideas &quot;on trial.&quot;</td>
<td>13. Embraces ideas to understand how one would or could come up with particular idea.</td>
</tr>
<tr>
<td>14. Assumes everyone (including self) is wrong as main posture in learning and making meaning.</td>
<td>14. Believes most trustworthy knowledge comes from personal experience.</td>
</tr>
<tr>
<td>15. Looks for something wrong.</td>
<td>15. Builds trust, then explores.</td>
</tr>
<tr>
<td>16. Suspects ideas that only feel right.</td>
<td>16. Uses ability to delay closure in order to understand.</td>
</tr>
<tr>
<td>17. Assumes obligation to examine critically.</td>
<td>17. Requires forbearance which may be misunderstood as passivity.</td>
</tr>
<tr>
<td>19. Has an awareness that adversarial methods used by authorities emphasize more power, more expertise, and more competence.</td>
<td>19. Views gossip as form of knowing since it exhibits concern for the personal, the particular, perhaps the petty but not the trivial.</td>
</tr>
</tbody>
</table>
Table 7 (continued),

<table>
<thead>
<tr>
<th>Separate Knowers</th>
<th>Connected Knowers</th>
</tr>
</thead>
<tbody>
<tr>
<td>20. Takes a point of view, addresses all other points of view that might challenge it.</td>
<td>20. Takes a point of view and sees where it will lead.</td>
</tr>
<tr>
<td>21. Experiences sense of comradeship with the authority when adversarial methods are used.</td>
<td>21. Has interest in learning in collaboration through knowing how others learn and working around idiosyncracies to develop ideas.</td>
</tr>
<tr>
<td>22. Understands that authority rests on reason and competence is expressed in hierarchy of status.</td>
<td>22. Authority rests in understanding various points of view and is de-emphasized for the sake of commonality.</td>
</tr>
<tr>
<td>23. Excludes or doesn't trust personal beliefs that couldn't be reasonably articulated.</td>
<td>23. Uses personality as part of perception and judgment of ideas; self-analysis may be used to identify topic's general patterns.</td>
</tr>
<tr>
<td>24. Takes a pragmatic, strategic point of view.</td>
<td>24. Criticism can only come through shared experiences of an insider.</td>
</tr>
<tr>
<td>25. Starts out from position of offence and as an adversary.</td>
<td>25. Starts out from position of empathy that projects self into other or receives other into self.</td>
</tr>
</tbody>
</table>

The Methods Used to Address Research Question One

The first research question was as follows: can an introductory course in preservice teacher education which included dialogue journals employed over nine weeks containing scenarios and prompts designed to promote cognitive development result in increased cognitive development? Change in participants' cognitive developmental stages was assessed by using the Ethical Reasoning Inventory (ERI) and the Measure of Intellectual Development (MID). The MID was administered by the researcher the second day of the course during the class period. The ERI was given to each student with a request to complete it over the weekend and return it to the researcher the following week. The MID was forwarded to Dr. William Moore and his associate at the Perry Network home office, who scored the data. Results were not known to the researcher or Dr. Rodgers until the completion of the collection and analysis of the journal data ratings for cognitive style and cognitive structure. In the same manner, the ERI was scored by the researcher after the collection and analysis of the journal data. As explained earlier, the researcher scored this self scoring instrument to facilitate the completion of the 46 page instrument by the participants.

For the next nine weeks, students made weekly entries in their journals in response to scenarios written by the researcher and an ongoing dialogue between each student and the researcher/instructor resulted. The researcher/instructor attempted to design responses that would promote cognitive development at the perceived cognitive developmental position of the individual students. This was done
through prompts that both challenged and supported the students in ways appropriate to their individual positions of cognitive development as described in the studies of Widick, Knefelkamp and Parker (1975), Widick and Simpson (1978), Knefelkamp and Slepitza (1978).

In addition, the researcher attempted to respond in the connected or separate style of each student. As the researcher got a clearer sense of style from the students' material, prompts were written to match the student's preferred style. Through the use of on-going dialogue there was an opportunity for the interactions between the researcher/instructor and the participants to be sustained over four to eight weeks and the challenges and supports to be repeated. Sustained challenges and supports appear to be needed in order to promote cognitive development.

At the end of the course, the MID was administered during the class period. Students were asked to take home the ERI and complete it over the weekend and return it to the researcher during the final week of class. Again, the researcher did not ask students to fill out the answer sheet in an attempt to avoid problems in collecting this data. The MID post-test was sent to the same certified raters and the results were held until after the journal data were analyzed. The ERI post-test was scored by the researcher after the journal data were analyzed.

Both continuous (223) and categorical (2.33) scores for the MID and ERI were analyzed for significant differences by the group. A correlated t-test was used on both pre-tests and post-tests. It should be noted that Rest (1975) cautions that "the multiple use of the t statistics is not completely appropriate in the case of the DIT stage
scores" (Straub and Rodgers, p. 433). The interdependency of changing stages means that "if one stage is ranked higher than another then the other stage has to be lower" (p. 433). This is true for the use of the t test in this study since the MID and the ERI pre-test and post-test results are recorded as stages and there is an interdependency in changing stages.

Table 8
System for Transposing Continuous Score to Categorical Stage Rating

<table>
<thead>
<tr>
<th>Continuous Score Range</th>
<th>Categorical Stage Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>00 to .20</td>
<td>round off to whole number of lower stage only</td>
</tr>
<tr>
<td>.20 to .50</td>
<td>next highest stage in a parenthesis ( ) and lower stage as a whole number</td>
</tr>
<tr>
<td>.51 to .78</td>
<td>next highest stage is whole number and lower stage in parenthesis ( )</td>
</tr>
<tr>
<td>.80 to whole</td>
<td>round off to higher stage only</td>
</tr>
</tbody>
</table>

The results of the MID and ERI were also analyzed for individual change using categorical (2.33) and continuous (223) scores. The results of the change in pre-tests and post-tests were analyzed to determine which stage scores significantly increased and which decreased using the estimated standard error of the measure. Rest presents the standard error of measurement for changes in stage levels based on samples recorded in the publication of the DIT Manual (Rest, 1986). See
Appendix D for the standard error of measurement for changes in stage levels. The standard error is based on each group's calculations but cannot be lower than the standards Rest has set.

In this study, the individual analysis of the pre-tests and post-tests included analysis of upward, downward and bidirectional patterns of change. Change patterns are determined when a positive change upward is balanced by a negative change at the lower stage. The results in upward and downward movement (the reverse of the upward movement) are reported. Bidirectional movement and lack of change in individuals is also reported. The results are analyzed for their consistency with developmental theory. In both individual and group analysis, categorical scores (e.g., 223) will be used to show change by indicating the representative percentage of change for individuals and the group sensitive to a 1/3 stage.

This design is a one-group pre-test/post-test design (Campbell and Stanley, 1963). In this case, the study involved two pre-tests and post-tests. The design procedure is shown below:

<table>
<thead>
<tr>
<th>Pre-tests</th>
<th>Treatment</th>
<th>Post-tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1A</td>
<td>X</td>
<td>T2AA</td>
</tr>
<tr>
<td>T1B</td>
<td></td>
<td>T2B</td>
</tr>
</tbody>
</table>

The treatment was the dialogue journal using four scenarios as a basis for dialogues extending four to eight weeks of a 10 week term. The pre-tests were the ERI and version A (Best Class paragraph writing task) of the MID. The post-tests were the ERI and version of AP (Ideal Class paragraph writing task) of the MID. See Appendix E for examples of the pre-test and post-test. By comparing the scores on the pre-tests and
post-tests it was possible to determine what difference, if any, occurred. The determination was based on appropriate statistical tests to determine if the difference was significant.

There were several disadvantages to this design because there was no control group. The dialogue journals may not have been the only factor in the difference in pre-test and post-test scores if they occur. It may be that students were affected by other factors outside the classroom, e.g., an experience with a close friend who created cognitive dissonance out of which the student(s) grew cognitively. The tests themselves or test familiarities may have promoted change. In this study the teaching team, Dr. Marantz and Ms. Williams, had their own styles of teaching which could have affected the attitude of the student(s) for growth both in positive ways and in ways that could result in retreat (Perry, p. 64 and 65).

The Methods Used to Address Research Question Two

The second research question was as follows: can student responses in the journals be used to assess cognitive structure as defined by Perry (1970) and to identify cognitive styles as defined by Belenky, Clinchy, Goldberger, and Tarule (1986)?

The criteria for assessing the Perry positions of cognitive development during the writing of the journals was determined by using the same rating criteria that are used in scoring the MID. Segments of the journals containing the ratable material were identified according to lines of reasoning in the following categories of:

(a) the structural view of knowledge,
(b) behavioral correlates—role of authority (teacher), role of learner (self or peers), proper evaluation, and cognitive skills used.

The rating was done by Dr. Robert Rodgers, a certified rater for the MID. Perry rating based upon journal data were then compared to MID pre- and post-test ratings using percentages of exact agreement, 1/3 stage agreement, and within one stage agreement.

Unfortunately, there is no measure comparable to the MID with which to compare journal rating of style preference. This study is a first step in creating such a measure. The bases for this measurement are the attributes for connected and separate knowing documented in Women's Ways of Knowing (1986, pp. 100-130). In that study only women were interviewed. In this study cognitive style was identified for both women and men based on journal entries.

The criteria for assessing the cognitive styles of separate or connected learning was determined by the choices of words intimating one or more of the attributes for the two styles. In most cases it was possible to assess style in students' natural responses to the scenarios without using other prompts.

The following is an example of a separate style response from a male student at position 3: "I could only express my views, state possible solutions and argue my points. Also, to be curious [sic] to fellow teachers using a calm and rational tone of voice. I have learned that the loudest person is not always heard." This example displays separate attributes, including: (a) taking a pragmatic, strategic point of view, (b) using reasoned, critical discourse, and (c) having an
awareness that adversarial methods used by authorities emphasize more power, more expertise, and more competence.

When style attribute prompts were used, the researcher used a variety of prompts. The following is an example of a connected-style prompt: "I'm impressed with your ambition to enter a profession when you know first hand that it isn't fully understood, valued, or supported by the general public. List two actions you could take to increase your own experience in the field of art history, describe each briefly." This prompt honors knowledge based on experience.

The segments of the journal containing ratable material were noted and identified according to the attributes listed from Women's Ways of Knowing. In some cases students used both separate and connected styles, the researcher marked the segments then went back and identified the style most often used.

The Chronology of Process

The research question and overview of methodology were put in place Spring and Summer Quarters, 1991. Simultaneously, arrangements were made to collect data in Art Education 225: Introduction to Art Education. The two instruments for the pre-test and post-test were obtained prior to Fall Quarter, 1991, and materials were assembled for the production of the blank books to be used for the dialogue journals. The researcher met with Dr. Marantz to explain the study and a preliminary schedule was agreed upon.

During Fall Quarter, 1991, the researcher administered the MID pre-test on the second day of class (Thursday, September 26). The tests
were scored by Dr. William Moore and an associate of the Perry Network. The researcher and Dr. Rodgers did not see the results until after the journal data was collected and analyzed. During this same class, students were given the ERI pre-test and asked to fill it out over the weekend and return it at the next class meeting (Monday, September 30). Again, these tests were not scored by the researcher until after data collection and analysis.

In the second week of the quarter, the researcher attended class (Tuesday, October 1) and led a workshop where students produced blank books. The books were made by hand sewing blank pages together into a 'signature', constructing a cover with cardboard and white drawing paper, and gluing the endpages of the signature to the cover.

After a break students were given the first scenario and asked to spend about ten to fifteen minutes writing. The following Wednesday (October 9) the journals were returned with prompts written by the researcher designed to engage the student in further dialogue. Students were invited to spend time reflecting on the researcher's responses and were encouraged to write outside class time although all students knew time would be allotted in class once a week for writing.

The third week (Thursday, October 10) a second scenario was introduced to the entire class and they were asked to spend ten to fifteen minutes writing on that scenario as well as responding to prompts received from the researcher on their first entry. Three times during the course, the researcher remained in the classroom taking field notes on the interactions of the students and teaching team. The focus of the observation was on the content and delivery of curricula by the
team and the verbal responses to the students. In this way, the researcher gained a sense of the challenge and support given to the class in general by both Dr. Marantz and Ms. Williams. This information was helpful to the researcher who was aware of aspects of the interactions with the teaching team that affected cognitive growth in individual students. One example of the affect of the information was the confrontive style of Dr. Marantz that lacked personalness which Widick and Simpson (1978) found essential for cognitive growth in both dualistic and multiplistic students. The observations are included in the analysis of the data in Chapter Four.

The process of introducing a new scenario continued for the next two weeks (Tuesday, October 15 and Thursday, October 24) while students continued to respond to the researcher’s prompts on preceding scenarios. Despite the cumulative nature of the writing prompts, only fifteen minutes was allotted before the researcher collected the dialogue journals. Students were encouraged to write outside class although it appears few students did so.

After the fifth week of class, no new scenarios were introduced and students spent the fifteen minutes writing responses to prompts the researcher had introduced to continue the four dialogues. Again there were few indications that students wrote outside class, although the journals were returned two or three days before writing was requested in class.

In the ninth week (Thursday, November 21) students wrote their final entries outside class and also during the fifteen minutes allotted in class. Journals were collected for a final time except for students
not in attendance. The ERI was handed out with a request that it be filled in and returned the following Wednesday.

In the tenth week (Wednesday, November 27) the researcher gave the MID post-test and collected the ERI post-tests that had been filled out at home. The researcher made a final observation of the class. It was necessary to return twice during the following week when students were presenting the information gathered for their final projects. These visits resulted in completing the collection of post-tests and journals.
CHAPTER IV

Data Analysis

Question One

The first research question was as follows: can an introductory course in preservice teacher education which included dialogue journals employed over nine weeks containing scenarios and prompts designed to promote cognitive development result in increased cognitive development? The change in cognitive developmental stages was assessed by using the Ethical Reasoning Inventory (ERI) and the Measure of Intellectual Development (MID). The MID was rated by two certified raters. The ERI was scored by the researcher, since this instrument can be self-scored and does not require a certified rater. See Table 9 for the results of the MID pre-tests and post-tests recorded in categorical ratings and results of the ERI pre-tests and post-tests in continuous average ratings. The results can be compared through the means scores given at the bottom of the table. The journal data was rated by one certified rater. See Table 10 for the results of the journal data ratings across the nine week period recorded in categorical ratings and including the mean scores for each of the two ratings.

The data was analyzed using correlated t tests on the pre-test scores and the post-test scores for the MID, the ERI, and the journal data.
### Table 9

**Evaluation of Students' Cognitive Developmental Stages Based on MID and ERI**

<table>
<thead>
<tr>
<th>Student</th>
<th>MID Pre</th>
<th>MID Post</th>
<th>Change</th>
<th>ERI Pre</th>
<th>ERI Post</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>333</td>
<td>333</td>
<td>0</td>
<td>3.88</td>
<td>3.80</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>233</td>
<td>233</td>
<td>0</td>
<td>3.19</td>
<td>3.61</td>
<td>+1/3</td>
</tr>
<tr>
<td>3</td>
<td>[333]</td>
<td>---</td>
<td>---</td>
<td>3.52</td>
<td>3.42</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>333</td>
<td>334</td>
<td>+1/3</td>
<td>3.80</td>
<td>3.29</td>
<td>−1/3</td>
</tr>
<tr>
<td>5</td>
<td>333</td>
<td>233</td>
<td>−1/3</td>
<td>4.04</td>
<td>4.34</td>
<td>+1/4</td>
</tr>
<tr>
<td>6</td>
<td>233</td>
<td>233</td>
<td>0</td>
<td>3.23</td>
<td>3.46</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>334</td>
<td>333</td>
<td>−1/3</td>
<td>3.12</td>
<td>3.30</td>
<td>+1/4</td>
</tr>
<tr>
<td>8</td>
<td>223</td>
<td>333</td>
<td>+2/3</td>
<td>3.16</td>
<td>3.08</td>
<td>0</td>
</tr>
<tr>
<td>9</td>
<td>[333]</td>
<td>334</td>
<td>+1/3</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>10</td>
<td>NR</td>
<td>---</td>
<td>---</td>
<td>3.30</td>
<td>3.15</td>
<td>0</td>
</tr>
<tr>
<td>11</td>
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<td>333</td>
<td>0</td>
<td>4.30</td>
<td>4.21</td>
<td>0</td>
</tr>
<tr>
<td>12</td>
<td>223</td>
<td>333</td>
<td>+2/3</td>
<td>3.69</td>
<td>3.80</td>
<td>0</td>
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<tr>
<td>13</td>
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<td>333</td>
<td>0</td>
<td>3.46</td>
<td>3.29</td>
<td>0</td>
</tr>
<tr>
<td>14</td>
<td>223</td>
<td>233</td>
<td>+1/3</td>
<td>---</td>
<td>NR</td>
<td>----</td>
</tr>
<tr>
<td>15</td>
<td>344</td>
<td>233</td>
<td>0</td>
<td>3.52</td>
<td>3.42</td>
<td>0</td>
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<td>334</td>
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<td>3.42</td>
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<td>333</td>
<td>0</td>
<td>[3.48]</td>
<td>NR</td>
<td>----</td>
</tr>
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<td>233</td>
<td>333</td>
<td>+1/3</td>
<td>3.69</td>
<td>3.96</td>
<td>+1/4</td>
</tr>
<tr>
<td>19</td>
<td>333</td>
<td>334</td>
<td>+1/3</td>
<td>4.50</td>
<td>4.40</td>
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<tr>
<td>20</td>
<td>233</td>
<td>233</td>
<td>0</td>
<td>3.20</td>
<td>3.69</td>
<td>+1/3</td>
</tr>
<tr>
<td>21</td>
<td>233</td>
<td>333</td>
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<td>3.61</td>
<td>3.84</td>
<td>0</td>
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<tr>
<td>22</td>
<td>333</td>
<td>333</td>
<td>0</td>
<td>3.48</td>
<td>3.08</td>
<td>−1/3</td>
</tr>
<tr>
<td>23</td>
<td>233</td>
<td>333</td>
<td>+1/3</td>
<td>3.61</td>
<td>3.50</td>
<td>0</td>
</tr>
<tr>
<td>24</td>
<td>333</td>
<td>344</td>
<td>+2/3</td>
<td>3.53</td>
<td>3.50</td>
<td>0</td>
</tr>
</tbody>
</table>

**Mean** 2.91 3.06 3.58 3.61

**Note.**

MID mean scores were based on 22 subjects.
ERI mean scores were based on 21 subjects.
0 = no change.
NR = not ratable data.
--- = no data available.
Table 10

Evaluation of Students' Cognitive Developmental Stages Based on Journals

<table>
<thead>
<tr>
<th>Student</th>
<th>Beginning Entries</th>
<th>Ending Entries</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>333</td>
<td>333</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>333</td>
<td>443</td>
<td>+2/3</td>
</tr>
<tr>
<td>3</td>
<td>334</td>
<td>334</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>5</td>
<td>334</td>
<td>334</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
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<tr>
<td>7</td>
<td>333</td>
<td>333</td>
<td>0</td>
</tr>
<tr>
<td>8</td>
<td>222</td>
<td>223</td>
<td>+1/3</td>
</tr>
<tr>
<td>9</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>10</td>
<td>334</td>
<td>334</td>
<td>0</td>
</tr>
<tr>
<td>11</td>
<td>333</td>
<td>443</td>
<td>+2/3</td>
</tr>
<tr>
<td>12</td>
<td>233</td>
<td>233</td>
<td>0</td>
</tr>
<tr>
<td>13</td>
<td>233</td>
<td>333</td>
<td>+2/3</td>
</tr>
<tr>
<td>14</td>
<td>332</td>
<td>332</td>
<td>0</td>
</tr>
<tr>
<td>15</td>
<td>344</td>
<td>344</td>
<td>0</td>
</tr>
<tr>
<td>16</td>
<td>333</td>
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<td>+1/3</td>
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<tr>
<td>17</td>
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<td>0</td>
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<td>19</td>
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<td>334</td>
<td>0</td>
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<tr>
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<td>223</td>
<td>0</td>
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<tr>
<td>21</td>
<td>223</td>
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<td>+2/3</td>
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</tr>
<tr>
<td>24</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
</tr>
</tbody>
</table>

Mean 2.96 3.14

Note.

Only 20 of the 24 journals were ratable.
0 = no change.
NR = not ratable data.
--- = no data available
See Table 11 for comparisons of the data based on t-test results. The use of the \( t \) statistic is not particularly appropriate for stage scores according to Rest (1975). This is due to the fact that stage scores are ranked so that when one member of the group moved to a higher rank and another member of the group showed downward movement, the higher rank was affected and it could appear that no upward movement occurred. Tables 15 and 16 show individual movement downward and upward by individual students with a discussion of the observations of the researcher for both cases.

The data was analyzed to show movement between the pre-test and the post-test that included upward movement (i.e., MID rating 222 to 223), downward movement (i.e., MID rating 334 to 233), and no change (i.e., MID rating 333 to 333). See Table 12 for comparison of movement on MID, ERI and journal data for change, including the mean for each instrument.

Based on this data analysis, the percentages of movement showing cognitive growth of at least 1/3 stage for MID ratings on the MID instrument and at least 1/3 stage for MID ratings on the journal data or at least .25 change for the ERI were compared. See Table 13 for the comparison of these percentages of movement for the MID, ERI, and the journal data. This comparison shows change for the class as a whole.

The MID pre-test and post-test were compared to show the number of subjects at each MID rating (i.e., 223, 233, 234, etc.) in the pre-test and post-test as an indication of cognitive growth for the class as a whole. The journal data ratings at the beginning and ending of the
Table 11

Comparison of t Test Results for the MID, ERI, and Journal Data

<table>
<thead>
<tr>
<th>Data</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Mean of Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERI</td>
<td>3.59</td>
<td>.25</td>
<td>.00286</td>
</tr>
<tr>
<td></td>
<td>3.59</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MID</td>
<td>2.91</td>
<td>58.45</td>
<td>15.09</td>
</tr>
<tr>
<td></td>
<td>3.06</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Journals</td>
<td>2.96</td>
<td>40.09</td>
<td>17.15</td>
</tr>
<tr>
<td></td>
<td>3.13</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* The ERI mean scores were based on 21 subjects. Probability = < .96.

The MID mean scores were based on 22 subjects. Probability = < .23.

The Journal data mean scores were based on 20 subjects. Probability = < .07.
Table 12

Comparison of Students' Cognitive Development on MID, ERI, and Journals

<table>
<thead>
<tr>
<th>Student</th>
<th>MID Change</th>
<th>ERI Change</th>
<th>Journal Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>+1/3</td>
<td>+2/3</td>
</tr>
<tr>
<td>3</td>
<td>---</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>+1/3</td>
<td>-1/2</td>
<td>NR</td>
</tr>
<tr>
<td>5</td>
<td>-1/3</td>
<td>+1/4</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>0</td>
<td>0</td>
<td>NR</td>
</tr>
<tr>
<td>7</td>
<td>-1/3</td>
<td>+1/4</td>
<td>0</td>
</tr>
<tr>
<td>8</td>
<td>+2/3</td>
<td>-1/3</td>
<td>+1/3</td>
</tr>
<tr>
<td>9</td>
<td>+1/3</td>
<td>---</td>
<td>NR</td>
</tr>
<tr>
<td>10</td>
<td>---</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>11</td>
<td>0</td>
<td>0</td>
<td>+2/3</td>
</tr>
<tr>
<td>12</td>
<td>+2/3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>13</td>
<td>0</td>
<td>0</td>
<td>+2/3</td>
</tr>
<tr>
<td>14</td>
<td>+1/3</td>
<td>NR</td>
<td>0</td>
</tr>
<tr>
<td>15</td>
<td>-1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>16</td>
<td>0</td>
<td>+1/4</td>
<td>+1/3</td>
</tr>
<tr>
<td>17</td>
<td>0</td>
<td>NR</td>
<td>0</td>
</tr>
<tr>
<td>18</td>
<td>+1/3</td>
<td>+1/4</td>
<td>0</td>
</tr>
<tr>
<td>19</td>
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<td>0</td>
</tr>
<tr>
<td>20</td>
<td>0</td>
<td>+1/3</td>
<td>0</td>
</tr>
<tr>
<td>21</td>
<td>+1/3</td>
<td>0</td>
<td>+2/3</td>
</tr>
<tr>
<td>22</td>
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<td>0</td>
</tr>
<tr>
<td>24</td>
<td>+2/3</td>
<td>0</td>
<td>NR</td>
</tr>
</tbody>
</table>

Mean: +0.12 +0.04 +0.16

Note.

The MID mean scores were based on 22 subjects.
The ERI mean scores were based on 21 subjects.
The Journal data mean scores were based on 20 subjects.
0 = no change.
NR = not ratable data.
--- = no data available.
Table 13
Table 13

Comparison of Percentage of Movement for the MID, ERI, and Journal Ratings

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Upward</th>
<th>No Change</th>
<th>Downward</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERI Ratings</td>
<td>6 or 29%</td>
<td>13 or 62%</td>
<td>2 or 9%</td>
</tr>
<tr>
<td>MID Ratings</td>
<td>10 or 45%</td>
<td>9 or 41%</td>
<td>3 or 14%</td>
</tr>
<tr>
<td>Journal Ratings</td>
<td>6 or 30%</td>
<td>14 or 70%</td>
<td>NONE</td>
</tr>
</tbody>
</table>

Note. The ERI ratings were based on 21 subjects. The MID ratings were based on 22 subjects. The Journal data ratings were based on 20 subjects.

writing period were also compared to show the number of subjects at each MID rating as an indication of cognitive growth for the class as a whole. See Table 14 for a comparison of cognitive rating changes based on the MID and the journal data. Table 14 allows a comparison of the pre-test and post-test for class growth based on the MID instrument and of the pre-test and post-test for class growth based on the journal data.

While this comparison shows that the number of subjects at the lowest position (222) decreased and the numbers in all other positions either stayed the same or increased, one cannot conclude that the journal was responsible for these changes because there was no matched
### Table 14

Comparison of Cognitive Rating Changes in Class Based on MID and Journals

<table>
<thead>
<tr>
<th>Rating</th>
<th>MID Pre</th>
<th>MID Post</th>
<th>Journal Pre</th>
<th>Journal Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>222</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>223</td>
<td>3</td>
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<tr>
<td>233</td>
<td>6</td>
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<td>3</td>
</tr>
<tr>
<td>234</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>332</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
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<td>1</td>
<td>1</td>
</tr>
<tr>
<td>443</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>

Total 22 22 20 20
comparison group. With this information about the individuals (Tables 9 and 10) and the class as a whole (Tables 11-14), information can be presented about individual change.

There was no downward movement by individual ratings in the journal writing data; however, there was downward movement in three subjects in the MID ratings. See Table 15 for a comparison of the individual ratings downward on the MID compared with the ratings of the journal entries. The student identified as #15 was late to class the day the MID post-test was administered and the instrument was filled out hastily. In reviewing the response, this researcher questioned the rating and noted that one of the two raters had coded the rating BP for "Ball Park rating," so designated because "there is insufficient data, or [it] is insufficiently clear data, for us to provide a full research rating with confidence—but enough for us to approximate" (from the flyer that accompanied the pre-tests).

Table 15

<table>
<thead>
<tr>
<th>Student</th>
<th>MID Pre</th>
<th>MID Post</th>
<th>Change</th>
<th>Journal Pre</th>
<th>Journal Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>333</td>
<td>233</td>
<td>-1/3</td>
<td>334</td>
<td>334</td>
</tr>
<tr>
<td>7</td>
<td>334</td>
<td>333</td>
<td>-1/3</td>
<td>333</td>
<td>333</td>
</tr>
<tr>
<td>15</td>
<td>344</td>
<td>233</td>
<td>-1</td>
<td>344</td>
<td>344</td>
</tr>
</tbody>
</table>
Whether caused by the course/journal or not, six students showed 1/3 to 2/3 stage growth or upward movement writing in dialogue journals over time (nine weeks) in a clinical setting (primarily the classroom). See Table 16 for a comparison of the journal data analysis for individual growth and the MID pre-test and post-test ratings for these same students.

Table 16

<table>
<thead>
<tr>
<th>Student</th>
<th>Journal Pre</th>
<th>Journal Post</th>
<th>Change</th>
<th>MID Pre</th>
<th>MID Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>333</td>
<td>344</td>
<td>+2/3</td>
<td>233</td>
<td>233</td>
</tr>
<tr>
<td>8</td>
<td>222</td>
<td>223</td>
<td>+1/3</td>
<td>223</td>
<td>333</td>
</tr>
<tr>
<td>11</td>
<td>333</td>
<td>344</td>
<td>+2/3</td>
<td>333</td>
<td>333</td>
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<tr>
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<td>223</td>
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<td>334</td>
<td>+1/3</td>
<td>334</td>
<td>334</td>
</tr>
<tr>
<td>21</td>
<td>223</td>
<td>234</td>
<td>+2/3</td>
<td>233</td>
<td>333</td>
</tr>
</tbody>
</table>

There were developmental changes in the ERI as shown in Table 9. When compared to the two smaller populations in Tables 15 and 16, the following should be noted. For those students who showed downward movement on the MID, #5 and #7 showed upward movement or cognitive growth of +1/4 on the ERI. There was no relevant change for #15 although the scores on the ERI were 3.52 for pre-test and 3.42 for post-
test, since the difference needs to be .25 or better or the scores are the same stage or substage. Of the six students who showed cognitive growth, three were among the students whose pre-test and post-test scores indicated change on the ERI. The students whose ERI scores showed a +1/4 growth were #16 and #21. The student who showed growth through the journal entries but downward movement of -1/3 on the ERI was #8. Although this researcher was not fully informed about this student, it was made known that the student had learning disabilities but was determined to complete college requirements. Part of this information came through private conversations with the student and through journal entries. It seems reasonable to suggest that the student might be more capable of journal writing as an assessment tool than reading and choosing reasons for opinions that best matched his own, which is required on the ERI assessment tool.

The changes in ratings for the MID and the ERI included upward movement. All the journal data indicated upward movement when data was ratable. However, both the MID and the ERI ratings included downward movement. In the case of #15, a view of the MID and field notes gave additional information which could lead to a re-evaluation of the data. The other two students who exhibited downward movement exhibited behaviors that are inconsistent with developmental theory in general. It should be noted that Perry (1970) described retreat as a behavioral option when a student lacked adequate support or experienced overwhelming challenge. Further study would be needed to qualify the downward movement in this study.
In the rating process, Dr. Rodgers noted the emergence of a pattern in the prompts and responses that appeared to have an influence on the lack of cognitive development in more of the students. See Table 17 for an analysis of the prompts that were +1, that missed promoting cognitive growth, or that only allowed assessment of the student's current stage. In order for the prompts to promote cognitive growth at the Stage 3 level, they need to exhibit +1 stage characteristics. In other words, students need to be challenged to give reasons why two or more ideas could be valid in order to move out of a multiplicitic stage and into a relativistic or contextual stage where they see that the meaning or truth of a situation is dependent on the context. Prompts that exhibited +1 intervention strategies based on the Widick, Knefelkamp and Parker (1975) criteria as explained above, were not successfully formulated with regularity. There were only 1.4 such prompts per person. Instead, assessment follow-up prompts were usually made (5.7 per person). These gave additional assessment data, but did not invite cognitive growth. Prompts that missed, that is, they reinforced the current level of cognitive development of a student or they did not generate ratable data were second in frequency with 2.8 per person.

See Chapter Five for an interpretation of the analysis of the data with regard to three areas: the design of the prompts to promote cognitive growth, the length of time across term (breadth) for writing in response to the prompts, and the length of time at each writing (depth) in response to the prompts.
Table 17

Analysis of Prompts for Promotion of Cognitive Growth

<table>
<thead>
<tr>
<th>Type of Prompt</th>
<th>Entries/Journals</th>
<th>Average</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>+1 students</td>
<td>35/24 (16%)</td>
<td>1.5</td>
<td>0 for 4</td>
</tr>
<tr>
<td>Miss students</td>
<td>69/24 (31%)</td>
<td>2.9</td>
<td>0 for 2</td>
</tr>
<tr>
<td>Assessment Only</td>
<td>121/24 (53%)</td>
<td>5.1</td>
<td>1 for 1 student</td>
</tr>
<tr>
<td>Follow-up prompts</td>
<td></td>
<td>9.5</td>
<td>11 for 1 student</td>
</tr>
<tr>
<td>responded to</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Prompts were analyzed for type even if responses were not ratable.
Question Two

The second research question was as follows: can student responses in the journals be used to assess cognitive structure as defined by Perry (1970) and to identify cognitive styles as defined by Belenky, Clinchy, Goldberger, and Tarule (1986)?

The journal data produced ratable data for both assessments according to the raters. The MID rating of the journal data by Dr. Rodgers indicated 20, or 83%, of the journals were ratable for cognitive structure and 4, or 17%, were unratable. Those that were unratable had either not responded at all, or not responded to the prompt, or had too few responses to prompts for a valid assessment. The journal ratings were compared to the MID ratings to determine the percentage of agreement ranging from exact agreement to within one stage of agreement for both the pre-test and post-test. Interrater reliability is based on similar comparisons. When there is a disagreement between raters the data is reviewed and discussed so that agreement can be reached. In the reports from Dr. Moore on the results of the pre-test ratings of the MID by himself and another certified rater, there were nine instances of disagreement out of 24 sets of scores from the two raters. In the post-test there were also nine instances of disagreement, including one where the ratings were 233 and 334 and the recommended rating was 334. See Table 18 for the percentages of agreement. These results are close enough to warrant further study and can be used in practice by instructors, but are not yet valid measures for research purposes. Use standardized measurements such as the MID for research purposes.
Table 18

Comparison of Ratings of Journals and MID for Agreement by Stage

<table>
<thead>
<tr>
<th></th>
<th>Exact Agreement</th>
<th>Within 1/3</th>
<th>Within 2/3</th>
<th>Within 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td>30%</td>
<td>95%</td>
<td>100%</td>
<td>---</td>
</tr>
<tr>
<td>Post-test</td>
<td>35%</td>
<td>80%</td>
<td>95%</td>
<td>100%</td>
</tr>
</tbody>
</table>

The Connected or Separate Knowers rating of the journal data by this researcher indicated 23, or 96%, of the journals were ratable for cognitive style and 1, or 4%, of the journals were unratable. The journal that was unratable had too few responses to prompts for a valid assessment. One journal showed a balance of connected and separate. This student was rated at 334 in the MID post-test and is 37 years old, leading this researcher to believe the student may be able to integrate the styles and select whichever seems most useful in a learning situation. The number of separate knowers was 7, or 29%—5 males and 2 females. The number of connected knowers was 16, or 66%—11 females and 5 males. The one integrated knower was a female. See Table 19 for a profile of connected and separate knowers by gender and cognitive structural level.

In order to more fully understand the nature of the prompts and responses, examples are given of responses at positions 2, 3 and 4 by connected and separate knowers, and of three types of prompts, including +1 prompts, missed prompts, and assessment only prompts. The examples
are identified by the code number used on the tables indicating individual students. Spelling, punctuation, capitalization, and other idiosyncrasies in writing are recorded as they appeared in the journal data. Student #11 self disclosed that he was dyslexic; however, the researcher has not obtained a diagnosis of the student from the university.

An example of a position 2 entry:

The course was so hard to understand. She spoke so broad on topics I never heard of, it was hard for me to grasp a taste or "smigen" of what she was talking about or teaching us. I felt I didn’t understand what, exactly, she was trying to teach me. I felt I was learning in a foreign atmosphere. I felt lost and scared. I would never learn any form of Philosophy. I didn’t want to be ignorant of Philosophy, but I could never grasp enough of it to understand and learn from it. The only Philosophy I know I learned at home (i.e., don’t steal, don’t hit your sister, etc). I wish I could have been able to understand the course...a little better." [Student #6, Female, Journal ratings 222-222]

This student holds the view that the authority holds the Truth or knowledge about "Philosophy." She sees herself as a learner with the responsibility for gaining the Truth. Despite her longing to understand, she feels incapable and compares the situation to learning from experience when she was at home. Not only do these cues tell the researcher that the student is a position 2 but she also exhibits connected knowing in her desire to understand what this "foreigner" is trying to teach her and in the reference to experience as a source for learning the Truth.

An example of a position 3 entry:

I was surprised to find out all the different avenues visual arts had to offer. My precollege experience was that a good artist was one who could copy what he saw with accuracy. I was excited to find out that artists were
<table>
<thead>
<tr>
<th>Student</th>
<th>Cognitive Style</th>
<th>Gender</th>
<th>Journal Pre</th>
<th>Journal Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Connected</td>
<td>Female</td>
<td>333</td>
<td>333</td>
</tr>
<tr>
<td>2</td>
<td>Connected</td>
<td>Female</td>
<td>333</td>
<td>443</td>
</tr>
<tr>
<td>3</td>
<td>Connected</td>
<td>Female</td>
<td>334</td>
<td>334</td>
</tr>
<tr>
<td>4</td>
<td>Connected</td>
<td>Female</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>5</td>
<td>Separate</td>
<td>Male</td>
<td>334</td>
<td>334</td>
</tr>
<tr>
<td>6</td>
<td>Connected</td>
<td>Female</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>7</td>
<td>Connected</td>
<td>Male</td>
<td>333</td>
<td>333</td>
</tr>
<tr>
<td>8</td>
<td>Connected</td>
<td>Male</td>
<td>222</td>
<td>223</td>
</tr>
<tr>
<td>9</td>
<td>Integrated</td>
<td>Female</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>10</td>
<td>Separate</td>
<td>Male</td>
<td>334</td>
<td>334</td>
</tr>
<tr>
<td>11</td>
<td>Connected</td>
<td>Male</td>
<td>333</td>
<td>443</td>
</tr>
<tr>
<td>12</td>
<td>Connected</td>
<td>Male</td>
<td>233</td>
<td>233</td>
</tr>
<tr>
<td>13</td>
<td>Connected</td>
<td>Female</td>
<td>223</td>
<td>333</td>
</tr>
<tr>
<td>14</td>
<td>Connected</td>
<td>Male</td>
<td>332</td>
<td>332</td>
</tr>
<tr>
<td>15</td>
<td>Connected</td>
<td>Female</td>
<td>344</td>
<td>344</td>
</tr>
<tr>
<td>16</td>
<td>Connected</td>
<td>Female</td>
<td>333</td>
<td>334</td>
</tr>
<tr>
<td>17</td>
<td>Connected</td>
<td>Female</td>
<td>334</td>
<td>334</td>
</tr>
<tr>
<td>18</td>
<td>Separate</td>
<td>Male</td>
<td>334</td>
<td>334</td>
</tr>
<tr>
<td>19</td>
<td>Connected</td>
<td>Male</td>
<td>334</td>
<td>334</td>
</tr>
<tr>
<td>20</td>
<td>Vague</td>
<td>Female</td>
<td>223</td>
<td>223</td>
</tr>
<tr>
<td>21</td>
<td>Separate</td>
<td>Male</td>
<td>233</td>
<td>234</td>
</tr>
<tr>
<td>22</td>
<td>Separate</td>
<td>Male</td>
<td>233</td>
<td>233</td>
</tr>
<tr>
<td>23</td>
<td>Separate</td>
<td>Female</td>
<td>233</td>
<td>233</td>
</tr>
<tr>
<td>24</td>
<td>Separate</td>
<td>Female</td>
<td>NR</td>
<td>NR</td>
</tr>
</tbody>
</table>

Totals  
C=15, S=7  
F=14, M=10  
2=8, 3=12  
2=7, 3=11, 4=2
much more than cameras with paint, that they could manipulate the viewer to describe an idea or thought or even an emotion. This is what my high school lacked. It was like they sucked the life out of art and just presented the process." [Student #11, Male, Journal ratings 333-443]

This student expresses the multiplicity of views of knowledge as he compares what he experiences in his studio courses and art history courses with experiences in high school. He describes a variety of ways that an artist "manipulates" her audience. There is a sense that there is a right way and the university way is right while the high school way is wrong, indicating that this student is not yet able to see the differences in context affecting learning.

An example of a stage 4 entry:

When I would use the description to try to describe what I think the artist was trying to convey to the viewer through telling possible meanings or influences the artist was under. I would express my opinion and then I might use comments from different local people I would know and write their different opinions. This would show the readers different views and then if they see the artwork they could decide for themselves. [Student #2, Female, Journals ratings 333-443]

For this student there is the sense that her opinion and the opinions of others in the community were valuable without qualification. The need to show "different views" is an acknowledgment of multiplicity. However, without reference to the merit of the different views, there is the attitude toward knowledge, authorities, and peers that since there is no Truth anymore, everyone's opinions are equally valuable.

An example of a connected style entry:

Perhaps the class size could be reduced. I've always thought that with a small group better discussions can take place. Obviously perhaps having actual textbooks of some sort would be of help. It would also be of
encouragement to students without excellent studio skills
to have assignments that deal with other elements of art."
[Student #7, Male, Journal ratings 333-333]

This student exhibits the value for learning through discussions
rather than debate. He acknowledges that resources such as textbooks
are valuable but only as needed during a discussion with peers who have
a variety of experiences. He goes on to suggest that there are a
variety of ways of gaining knowledge from peers and all ways need to be
honored. These characteristics show an "interest in learning in
collaboration through knowing how others learn and working around
idiosyncracies to develop ideas" as described in Chapter Three, Table 7,
Cognitive Style.

An example of separated style entry:

I could only express my views, state possible solutions
and argue my points. Also, to be courteous to fellow
teachers using a calm and rational tone of voice. I have
learned that the loudest person is not always heard.
[Student #21, Male, Journal ratings 223-234]

The example shows an indication of a step by step approach for
learning that involves one person's point of view versus another's and
uses rules of behavior as part of the procedure. This student is
willing to put his own opinion on trial and "assumes everyone (including
self is wrong as main posture in learning and making meaning" and
"appeals to rules, laws, procedures, or principles to adjudicate
situations" as described in Chapter Three, Table 7, Cognitive Style.

An example of a +1 prompt:

Then let's look at the specific site you'd most like to
teach in--compare two sites such as a rural, middle school
vs. an inner city elementary school and list the strengths
and weaknesses each holds for you.
In this example the researcher kept the comparison to two options although each option has complexity. The prompt got at the thinking underneath each option and did not require the student to commit to one site but led the student to considerations that might allow for a commitment.

An example of a missed prompt:

The modern period is generally between 1920-1950 and was dominated by a freedom in subject matter and expression. A free lance artist is one who works for herself not for a company or management agent, etc. It's important to be clearer in your use of terms and not make assumptions.

Most missed prompts were the result of a lack of response on the part of the student or a response that did not match the prompt. In this case, the researcher missed the opportunity to use a +1 prompt by reverting to a didactic process and correcting a student without finding out why the student had used the terms the way he did. It is an excellent example of the inability on the part of the researcher to honor the learner. The first two sentences make statements from the researcher's point of view, the last sentence excludes a discussion which could be helpful to the researcher and the student. It is interesting to note that this prompt was given to the student who self-reported being learning disabled and determined to complete his bachelor's degree.

An example of an assessment only prompt:

Often teachers are expected to teach a curriculum someone else has written, how would you go about preparing to teach a curriculum you had handed to you such as a computer course for middle school?

This prompt has the potential for assessing the cognitive structure and style of the student but does not challenge the student
the way a +1 prompt would. An alternative prompt that could promote
cognitive growth might ask the student to list the strengths and
weaknesses in a comparison of a computer course that was handed to her
and one she designed herself.

See Chapter Five for a discussion of a proposed research project
to analyze the prompts and responses using a sociolinguistic research
method. The data generated for this study will be the basis for a
qualitative study to enhance the design of the prompts for promotion of
cognitive growth.
CHAPTER V

Conclusions and Future Studies

Discussion of the Results of the Analysis

Design of the Prompts to Promote Cognitive Growth

The prompts in this study served two purposes: (a) to assess the student's cognitive structure and style, and (b) to promote cognitive growth. The analysis of the data shows that the prompts were useful in assessing the student's structure and style but were not as successful at promoting cognitive growth. Without a comparison study and a qualitative analysis of the dialogues, it would be premature to speculate on the effect of the intervention to promote cognitive development. Furthermore, it would probably be important to analyze the course content and instructor(s) for both cognitive structural level and dominant cognitive style, as well as additional data on the students including: age, nature of public school experience, current personal experiences, aptitude and achievement.

However, given the criteria (Widick and Simpson, 1978) for promoting cognitive growth at both the dualistic positions (1-3) and the multiplicitic and relativistic positions (4 and 5), the prompts can be criticized for their lack of promotion of growth. Prompts to promote growth in those students at position 2 need to make explicit the
extension of descriptions, explanations, and even comparisons to include the reason behind the students' responses. The question that was missing in the prompts was "why" and this question needed to be explicit to meet the students' needs for structure and to encourage the students to think about their thinking. The next step in the use of the +1 prompt would be the introduction of a second possible response from another point of view. The prompt could encourage the combination of description and/or explanation with the explicit question "why." In this way, the student would experience the contextual nature of two different descriptions and/or explanations as a means of internalizing position 3, leading from dualism to a multiplicitic view of knowledge.

For example, a student might be asked to describe a painting by her favorite artist, Picasso, and give two reasons why this painting was valued. One of the reasons could have to do with the beauty of the lines and colors of a nude painting from Picasso's Rose period. The next prompt could challenge the student to describe and defend (why) a Picasso painting of nudes done in a primitive style based on the influence of an exhibition of the African works of art the artist was known to have seen. A third prompt could ask the student to compare the two styles and criteria (why) for their value with a nude by Manet, pointing out the similarities and differences. Thus, in a step by step process the dualist works her way through to a more multiplicitic view. The prompts in this study often failed to extend the students' responses to include reasons behind their answers.

A student who enters the course at Perry position 3 would be encouraged to position 4 through +1 prompts that are similar to those
for position 2 students. However, three points of view could be focused on, abstraction could be introduced, and student involvement in structure could be encouraged while maintaining personalness through the dialogues.

Challenges for position 4 students not only emphasize differentiation through descriptions, explanations and comparisons but ask the student to begin to integrate the knowledge encompassing two or three views. In this way, the student is encouraged to commit to a point of view using position 5 cognitive structure.

In the scenario above, the student is led to an abstract "what if" situation but is asked to continue to explore the paintings on a separate basis—the effect each might have. As a +1 strategy for the position 4 student, the fourth prompt could ask the student to give an opinion about the "best" of the three paintings and explain the basis of the opinion. In this way, the student is challenged toward commitment. A fifth prompt could ask the student to agree or disagree with a statement about Picasso's relationships with the significant women in his life and how this information affects her appreciation of the artist's work. Here the student might need to hold conflicting values and make a commitment to one of the values or override the conflict through an explanation of the difference in the contexts of the two values. These suggestions for strengthening the prompts in their promotion of cognitive development are based in the work of Rodgers (1991) and King (1990).
Time Across a Term for Writing in Response to Prompts

The responses for this study were written during a nine week period on a weekly basis. That is, the instructor/researcher visited the class once a week at the beginning of the period and had approximately 15 to 20 minutes to organize the students and oversee their writing. By the third week, students had three prompts to respond to and from the fourth week on they were asked to respond to four prompts. Although the suggestion to begin their writing outside of class was made by the instructor/researcher and reinforced by Dr. Marantz, there is little evidence that this took place. Those students who wrote little in their journals were often engaged in quiet conversations during the time for writing. Both the quantity and the quality of the time students allotted across the term for writing was poor and probably inadequate.

There are three possibilities for improving dialogue journal writing across the term. Reward the students for writing outside the class as well as in the class by giving credit for their journal entries. Extend the writing time to 30 to 40 minutes per week. Divide the writing time across the week for each of the scenarios so that students would have 10 minutes at the beginning of each class to write on one of the four scenarios. This would require more planning on the part of the instructors but would continue to put the burden of assessing students and designing prompts on the instructor/researcher.
Time at Each Writing in Response to Prompts

In the final suggestion for arranging quality time for responses in the last section, this researcher recommended journal writing for 10 minutes on a daily basis. In order for cognitive change to take place, a student needs consistent and repeated exposure to challenges and supports appropriate for a +1 experience at the appropriate level (multiplicistic or relativistic). A minimum of 10 minutes for each prompt would be necessary for most students. Although this researcher returned the journals several days prior to the weekly scheduled time for writing, few took advantage of the opportunity to write for longer than the class time of 15 to 20 minutes. Thus students either ignored prompts or wrote very little for each of the prompts.

This study was based on the reality that both dualists and multiplicists are members of most classes at the undergraduate level. Instructors have varying interests in teaching to cognitive growth and few are concerned with designing a curriculum that is inclusive of strategies to assess and promote cognitive structural development and cognitive style. If the journals are to serve as a strategy for assessing both cognitive structure and style as well as individualizing interventions to promote cognitive development at the appropriate level, then time will have to be allocated for journal writing and the analysis of the writing for appropriate prompting. Initial writing for assessment will need to be made at the earliest possible time and the instructor/researcher and another qualified rater would need to analyze the writing. It is clear from this descriptive study that not only the
students needed more time for writing but the researcher needed more
time and support in order to carry out the strategy.

Dialogue with the Literature

Cognitive Structure

Comparing the view of knowledge in the Perry scheme (1970) with
that documented in Women's Ways of Knowing (1986), some differences in
cognitive structure for men and women have been clarified by Rodgers
(1991). Of particular interest for this researcher is the observation
that Rodgers made that Belenky, Clinchy, Goldberger, and Tarule did not
describe a position comparable to Perry's position 3--multiplicity
subordinate. Rodgers puts the Subjective Knowledge position identified
in Women's Ways of Knowing with Perry's position 4--Multiplicity based
on the common view of subjects in both studies that knowledge is no
longer absolute and a view of authority as no longer absolute. The
shared view of the self as learner has to do with a sense of autonomy in
both the men at Harvard and the women in the 1986 study.

This researcher wonders if the reason that Belenky, Clinchy,
Goldberger, and Tarule did not describe a position with a view of
knowledge comparable to Perry position 3 is the result of a lack of
connectedness with authority experienced by the women in the study. In
position 3, the learner perceives that the authority has the methods for
finding the knowledge even if that person doesn't hold the knowledge.
Out of this perception the learner views self as one who can work with
the authority using methods that the authority teaches or models and in this way the knowledge can be pursued by both authority and student.

If the female student finds the processes for learning so foreign to her own style, then it would be difficult to imagine a common search for knowledge among students with the authority. This researcher speculates that the female student who is described by Rodgers as intuiting and incommunicable may be at position 3 but without any connection. It could be that not until her intuition is validated by female peers can she reenter the public arena of the classroom and exhibit either connected or separate styles for gaining knowledge. It is likely that undergraduate women are at their most vulnerable at position 2 and appear to either take on the authority through an authentic or learned style of separate knowing or they remain silent making meaning as best they can.

Cognitive Style

The issues raised at the end of the last section have to do with the use of separate and connected styles for cognitive structural development in higher education. With an interest in collaborative learning, some instructors are using strategies that are a better match for connected knowers as described in *Women's Ways of Knowing*. The attributes list for cognitive style included in this study should be a useful tool in identifying connected and separate knowers and may lead to options for students with different styles designed by the teacher and including assignments, classroom organization and teaching strategies.
This study makes apparent the gender tendency rather than the gender specific nature of the styles. It has been this researcher's recent experience that when male instructors who are connected knowers are made aware of this issue, they confirm that they have had to learn another style in order to be heard by their colleagues. As students and faculty alike are given opportunities to identify a preferred style and appreciate the advantages of the other style in certain situations, they may be able to integrate both styles and select the style best suited to the learning context.

This brings up the issue of an instructor's responsibility to help students understand and identify their cognitive style and, for that matter, their cognitive structural position. One of the studies (Gabelnick, Howarth, and Pearl, 1984) cited in the literature review pointed out problems with students who believe that they will be judged according to their cognitive style and cognitive structural position. There appears to be no research on the effect of students being informed about issues of cognitive structure and style at the undergraduate level. This researcher did observe resistance to being labeled by some students in both pilot studies despite the explanation that the information could be helpful to the student in understanding personal cognitive development and was not used judgmentally.

Uses of Dialogue Journals in Preservice Teacher Education

The literature reviewed showed that journals are not uncommon as a part of the student teaching experience in teacher education. Journals were also shown to be used in the humanities as well as the
sciences. Journals appeared to serve a variety of purposes for individual instructors; this researcher identified four areas of focus: journals to develop skills, journals to develop personal learning styles, journals to develop higher order thinking, and journals as a source of research data.

The use of dialogue journals to assess and promote cognitive development across a program best serves these purposes when embedded in a curriculum that is structured for cognitive development. A first step would be the analysis of courses in a preservice teacher education program such as art education. Using the model designed by Rodgers (1991), curriculum can be analyzed for the cognitive structural level(s) attended to in instructional strategies as well as inclusion of both separate and connected style.

The first step would be an assessment of individual students in the program at entry level (such as students in Art Education 225: Introduction to Art Education in this study). An inservice could be designed to introduce faculty, including teaching assistants, responsible for teaching the undergraduate program to the design of a curriculum for each of the core courses. The design would be inclusive of cognitive structures and styles and incorporate +1 strategies to promote cognitive development. This study and Stonewater and Stonewater's (1983) description of the use of developmental cues by the instructor in teacher education courses offer a model for training those who want to do informal assessments of cognitive structural development through written and oral interactions. Additional resources for promoting cognitive growth are found in the description of +1
environments (Kohlberg, 1971 and Widick and Simpson, 1978) as well as other studies described in Chapter Two.

**Recommendations for Future Studies**

**A Comparison Study of the Course**

A comparison study is underway for this study based on the MID pre-test/post-test administered by the researcher to students in Art Education 225: An Introduction to Art Education the term following this study. The course was basically the same and the teaching team was the same: Dr. Kenneth Marantz and Ms. Cheryl Williams.

**A Qualitative Analysis of the Journal Dialogues**

Further research is planned to analyze the interactions between students and the researcher in the journal dialogues. Reference to a "clinical analysis" of student journals is made in the study by Wicick and Simpson (1978, p. 43). Descriptive data included: lengthier entries by relativists attributed to more abstract and complex thinking, less self-reflection in entries by dualists attributed to their perspective of external locus of control, and a concern of relativists for "making coherent order out of complexity" (p. 44). These insights could lead to a formal instrument for analyzing journal data. This researcher is encouraged to use the data for a qualitative study to draw out attributes in the responses and their relationship to the prompts.
The Role of the Master Teacher in the Use of Dialogue Journals in Preservice Teacher Education

Further study will be necessary to investigate the expanding role of the master teacher in preservice teacher education through the use of dialogue journals. The journals, as described in this study, might be a mentoring tool as well as a tool in assessing and promoting cognitive development in the setting of Professional Development Schools. Such a study would involve the training of mentor teachers in the use of prompts, matching and mismatching mentors and undergraduates, the logistics of collecting and responding to responses by the mentor teacher, the use of computer networking, and the role of the mentors during the first few years of their proteges' teaching experiences.

Hypotheses Generated by This Study

In conclusion, this study has generated hypotheses about the degree of personalness in the journals, the prevalence of connected males in art education, and dialogue journals as an isolated strategy. This researcher found the dialogue journal writing with students in both pilot studies resulted in a high degree of personalness. This supportive behavior is necessary in balancing the challenges to students that result in cognitive development.

Supportive behavior in the dialogue journal writing by the researcher may disrupt cognitive development if it is counterproductive to the strategies for challenge. Examples of the counterproductive in nature are noted below:
(a) one student was late to class due to a work schedule and the researcher assured him not to worry about having less time to write in the journal; however, this student had so few entries that the ratings were marked "?" by the rater due to lack of data.

(b) one student self disclosed being learning disabled and the researcher took on a didactic role through correcting art related concepts and vocabulary in an effort to "help" the student.

(c) an older student who had several experiences in common with the researcher was assured not to worry about problems with the MID post-test which resulted in questionable ratings.

(d) several of the students became recognized by the researcher because they sat near the researcher during observation and writing time. It appears the researcher spent more time on the responses with these students.

(e) students indicating particular interests or concerns through the journal writing received additional information and support that may have detracted from time spent on the prompts.

It could be that more connected style males are undergraduate students in art education than in education in general. Of the 15 students rated as having connected style, 6, or 40%, were male. In a study (Rodgers, 1991) of an undergraduate program in economics, the students were described as "75% Separate learning style and 25%, the Connected style" (p. 32). This study does not indicate what percent of each style group were male.

Dialogue journals as an isolated strategy for assessing cognitive structure and cognitive style are effective. Dialogue journals increase in effectiveness for promoting cognitive development when they are embedded in a course designed to promote cognitive development at all positions and in both cognitive styles. The last two related hypotheses will require further study.


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Appendix A
Appendix B
Appendix C
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Appendix E

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