A DESCRIPTIVE STUDY OF PRESERVICE TEACHERS' CONCEPTUAL CHANGE DURING READING METHODS INSTRUCTION

By

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DEDICATED TO

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My Son

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ABSTRACT

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The purpose of this descriptive and exploratory study was to investigate teacher candidates' preconceptions, interactions, and conceptual change about reading instruction during reading methodology instruction. The sample for this study was drawn from the population of teacher candidates in the Multiple Perspectives Teacher Education Program at Michigan State University. Qualitative research techniques were used to report the findings of four subjects in the study. The data sources used were the following: (1) Primary Source -- semantic maps, (2) Secondary Sources -- Proposition Inventory, reading session debriefing sessions, and reading definitions. Data were collected in three phases: (1) pre-instructional, (2) instructional, (3) post instructional. Data were presented and analyzed in individual subject reports and in a summarized report. Findings of the study were: (1) Teacher candidates have preconceptions when entering reading methods instruction. (2) Teacher candidates'

conceptual framework of reading instruction did change. The change occurred in stages during instruction. (3) Teacher candidates' conceptualization of a change in reading instruction is affected by their view toward the role of the teacher and the role of the student in the instructional process. (4) The teacher candidates' conceptual development of reading instruction is related to aspects found in the novice-expert body of knowledge.

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CHAPTER I

INTRODUCTION

Teacher preparation programs do not operate on the assumption that "teachers are born, not made." To the contrary, teacher educators assume the existence of knowledge about how teachers become teachers. However, there is little research on how prospective teachers acquire an understanding for this body of knowledge in teacher preparation programs. What does the learner already know upon entering a teacher education program? How is the learner's previous knowledge affected when the learner comes into contact with new knowledge in teacher education instruction? Such questions need to be answered if teacher education programs are to improve. This study attempted to answer such questions by investigating: (1) teacher candidates' preconceptions (2) how these conceptions changed during teacher education instruction.

Background of the Problem

Two aspects about preservice teachers provide background knowledge to bring focus to the problem investigated in this study: (1) the teacher candidates' prior knowledge of teaching (2) the cognitive change in the development of the teacher candidates.

Teacher Candidates' Prior Knowledge of Teaching

Teacher preparation really begins during elementary schooling and not in college. Teacher candidates do have prior knowledge of teaching since they have attended elementary and secondary schools. Hanson and Herrington (1976) note that "students entering college already know what teaching is." Students have more exposure to teaching than to any other occupation.

All children occasionally see policemen, firemen, and doctors but none see these professionals nearly as much as they see teachers. Students watch teachers for years. They acquire a kind of familiarity with the position and role of a teacher that is unparalleled in their experience with any other occupation. Lortie (1975) refers to this experience as the "apprenticeship of observation" For example, after being in reading groups for years, teacher candidates already have knowledge about reading and reading instruction.

Book, Byers, and Freeman (1983) substantiate that prior knowledge of teaching exists. They found that preservice teachers believed they knew enough about teaching that:

1. About 24% of them felt they were highly or completely confident in their ability to teach immediately.
2. Another two-thirds felt they had moderate confidence in their general teaching ability.

Conceptual Change

Despite the initial confidence which candidates bring to the teaching profession, change does occur. Floden and Feiman (1981) addressed the factor of professional change in teachers. They argue that the "individual is an active agent in both the motivation and direction of change, and the environment provides situations that support some changes and inhibit others." Change is not simply imposed from the outside. "The change that occurs is determined by the individual, not by the environment."

As Stephens (1969) states, "The prospective teacher does not come to us as an inert, empty memory drum, waiting to be programmed in any manner that we see fit." Preconceptions interact with instruction and other environmental factors which lead to conceptual change. Since both preconceptions and their interaction with instruction are predictable, the factor to be examined is conceptual change.

In summary, teacher candidates' prior knowledge of teaching and the cognitive change in the development of a teacher is the focus of this study.

The Problem

The purpose of this descriptive study is to investigate the conceptual change of teacher candidates during

teacher education instruction. The over-arching question is:

> In what ways do teacher candidates' understanding of reading instruction change during a course in reading methodology?

Research Questions

Two major questions were posed:

1. How do teacher candidates' understanding of reading instruction change during a reading methods course?
   a. What is the teacher candidates' initial conception of reading instruction?
   b. What is the nature of the teacher candidates' conceptual change?
   c. What is the extent of the teacher candidates' conceptual change at the termination of instruction?
2. What factors influence and inhibit conceptual change?

Significance of the Problem

The identification of teacher candidates' conceptual change and the description of the factors that influence the change can contribute to teacher educational research in three ways. This study:

1. provides a beginning into a new field of inquiry where little or no research has investigated conceptual change of teacher candidates;

2. is of value to future experimental studies because it presents additional insights into conceptual change; and
3. offers descriptive information about the continuum of conceptual change (that is, this change can be traced, analyzed, and comprehended as it develops and is more helpful to teacher educators than mere knowledge of pre-course and post-course conceptual understanding.)

The ultimate long-range question beyond this study is this: If the student is not an "empty drum" to be programmed, how can teacher education best deal with a "full drum" to produce an effective classroom teacher?

Definition of the Terms

The following terms are relevant to the study:

1. Preconception--entry level understandings teacher candidates possess regarding reading instruction,
2. Semantic mapping (cognitive mapping)-- a graphic representation used to illustrate concepts and relationships between concepts such as classes, properties, and examples. (Johnson and Pearson, 1978)

Design of the Study

This descriptive study used qualitative research techniques. Field notes, semantic maps, and debriefing transcripts were the major data sources. Preservice teacher candidates were the subjects in this study.

Sample Selection

The subjects in this study were four randomly selected sophomore or junior elementary teacher education candidates in the Multiple Perspectives Teacher Education Program at Michigan State University. Multiple Perspectives is an alternative teacher education program that emphasizes teacher decision-making. Emphasis is given to teacher decisions about instructional design, instruction, individual differences and group development. The teacher candidates are guided to understand the pressures and constraints of decision-making and to realize the consequences of them.

During this study the subjects took the first two of a sequence of three reading methods courses. They also participated in an associated field experience.

Data Collection

Data for the study were collected in three phases: (1) the pre-instructional phase, (2) the instructional phase, and (3) the post instructional phase. The pre-instructional phase took place during the first two days of the fall term in September 1983 before instruction began. The instructional phase occurred from the first day of actual instruction in September to the last week of the winter term in March, 1984. This was a total of twenty weeks of instruction. The post instructional phase occurred during examination week in March.

Three bodies of data were collected. First, data were compiled on the teachers' conceptions of reading instruction before instruction began, at two interim points, and at the termination of instruction. Second, data were collected on what the teacher candidates were thinking while implementing lessons during reading lesson debriefing sessions. Third, course information from reading methods classes and other teacher education instruction was compiled for this study.

Pre-instructional Phase. Two measurements were administered to the four subjects during the pre-instructional phase to obtain information regarding their concept of reading instruction. First, each subject constructed a semantic map of reading instruction. A semantic map was used as a graphic representation to illustrate the subject's concept of reading instruction. The reading teacher educator also completed a semantic map. Secondly, each subject completed a Proposition Inventory (Duffy and Metheny, 1978). This Likert scale instrument surveys five conceptual dimensions of reading. This measurement also was used for additional information about the subjects' conception of reading instruction.

Instructional Phase. The researcher attended reading methods class sessions to collect data on the reading methods instruction and took notes on the content of the instruction similar to the notes that a teacher candidate would take. Also, during the field experience the

researcher observed the implementation of reading lessons taught by each of the four subjects and conducted a debriefing session with the subject after each lesson. Third, each subject constructed two more semantic maps on reading instruction. One was produced during the eighth week and another during the fourteenth week of instruction. Fourth, the subjects wrote definitions for the terms "reading" and "reading instruction" in November and March.

Post Instructional Phase. The subjects completed another Proposition Inventory and constructed a fourth semantic map after twenty weeks of instruction.

In an effort to combat the possibility that the subjects might answer in a way that the researcher wanted and not according to the subjects' real beliefs (Borg and Gall 1983), the researcher explicitly stated that the answers were for research and not for grading or other evaluative purposes.

Data Analysis

This descriptive study used qualitative research techniques. The semantic maps and the other data for each teacher candidate were analyzed by noting how the maps changed in reference to the reading educator's semantic map, the content of the reading methods instruction and the debriefing sessions of the teacher candidates' reading lessons. Findings were then integrated and examined in two ways:

1. the findings for each subject were presented in a separate report,
2. the findings from each subject were combined into a composite summary.

The results were analyzed in terms of the study's research questions.

Assumptions and Limitations

There are several assumptions and limitations which influenced the study.

Four assumptions were made in this study:

1. It was assumed that the data collected from the semantic maps and other measurements gave an accurate indication of teacher candidates' conceptions of reading instruction.
2. It was assumed that the field notes taken by the researcher during the reading methods instruction class correctly portrayed the major conceptual themes taught.
3. It was assumed that "debriefing" discussions between the researcher and the subjects and the manner in which they were conceptually organizing their experiences provided accurate information of what the subjects were experiencing.

There are five limitations in this study:

1. Since this is a descriptive study, the data obtained are qualitative and are not appropriate for statistical quantitative treatment.

2. Due to the small number of subjects studied, the generalizability of the results are limited to the teacher candidates involved. Borg and Gall (1983) defend the use of limited numbers of subjects by saying, "A study that probes deeply into the characteristics of a small sample often provides more knowledge than a study that attacks the same problem by collecting only shallow information on a large sample."
3. Individual human aspects, personality variables and learning styles were not accounted for in this study, and information was not gathered or considered regarding the personal, physical and emotional conditions of the subjects.
4. The semantic maps were analyzed and interpreted by the researcher. It is recognized that the researcher's judgments may not necessarily be the judgments of all teacher educators.
5. The researcher attempted to maintain a comparable instructional and personal relationship with all four subjects. It is recognized that her role as a field instructor may have created differential kinds of influences on the subjects.

Organization of the Remainder of the Study

Chapter II includes a literature review related to this research study of teacher education, cognition, and cognitive change. The procedures for data collection and

analysis are described in Chapter III. The findings of the study are reported and discussed in Chapter IV. Chapter V summarizes the study and the major findings, discusses its significance, and states recommendations.

CHAPTER II

LITERATURE REVIEW

Introduction

The purpose of this chapter is to establish the context for this study. It contains two sections. The first reports on literature regarding three theories of teacher education. The second section discusses literature on cognition and cognitive change. One teacher education theory and cognitive change becomes the subject of this research.

The first section is based on the assumption that teacher education is designed to teach teachers about teaching. To that end, three major theories of teacher education are presented: technical training, socialization, and cognitive developmentalist. Since this study investigates cognition and cognitive change which the cognitive theory emphasizes, the cognitive developmentalist theory appears to be particularly appropriate for more intensive investigation. Consequently, three theories are presented with major emphasis on the cognitive developmentalist theory.

The conclusion is reached that if the way to improve teacher education is to help teacher candidates make

connections through the developmentalist theory in order to attain a higher cognitive level, the monitoring and assessing of this development must be achieved by examining the teacher candidates' cognitive framework and its subsequent change.

Teacher Education Theories

Introduction

Three major theories of teacher development are discussed in this section. Leaders of the technical training theory emphasize a process-product mode. From this theory, teachers should be trained to perform tasks (process) in order to enhance student achievement (product). Theorists in teacher socialization contend that a teacher's major source of development is from the environment and stress the perpetuation of classroom customs. The cognitive developmentalist proponents view the teacher as an active learner and conceptualization develops about teaching as an interaction between the learner and the environment. Recently, a concern for connecting theory with practice has emphasized the need for creating connections or linkages, which has in turn caused teacher education to focus more on the cognitive developmentalist view.

While the developmentalist theory is emphasized in this study because of its close relationship with the connection-making rationale, the other two theories need to be explained.

Technical Training

In the technical training mode, a teacher is trained. The teacher trainee follows specific rules set forth by someone else. The future teacher assumes a passive role in the training and implements what another figure -- that of the trainer -- has practiced. The beginning teacher is seen as someone who obtains skills from someone else and then puts the skills into practice. This is the process-product mode. To illustrate an example of the training point of view, Gage (1978) said:

> The improvement of teaching -- which is tantamount to the improvement of our children's lives -- will come in large part from the continued search for a scientific basis for the art of teaching. (p.41)

He felt that educators should not be as much concerned "with the teacher's 'knowing that' as much as with his or her 'knowing how.'"

Rosenshine and Meyers (1978) described a model of teacher training. This model provided very specific details for direct instruction. The teacher is told what to say, how to say it, and when to say it. A teacher is trained to learn how to perform skills such as, training attention, using signals, teaching to a criterion, individual turn-taking, pacing, correcting incorrect responses, monitoring student progress, and providing individual remediation. A robot or a microcomputer could theoretically replace the teacher under this model.

The inherent educational goal within technical training theory is to equip teachers with specific skills. This training is accomplished through a prescriptive mode.

Socialization

A second theory proposed for the development of teachers is socialization. This theory can be seen as an internationalization of bureaucratic organization processes. It emphasizes the absorption of the new teacher into the institution. The teacher is molded by the external forces and influences within that institution. Something outside the teacher influences the change.

In 1932, Waller held "that teaching makes the teacher. Teaching does something to those who teach." Referring to the new recruits into the profession of teaching, Waller said:

> They do not know how to teach, although they may know everything that is in innumerable books telling them how to teach. They will not know how to teach until they get the knack of certain personal adjustments which adapt them to their profession, and the period of learning may be either long or short. (p.380)

Lortie (1975) discussed this socialization of learning to teaching with the term "apprenticeship of observation." This behavior does not allow new teachers to be analytical. Throughout their lives, preservice teachers had teachers to observe. Lortie describes how new teachers go out and teach the way they were taught in K-12 education. This trend keeps a conservative status quo in the profession. Teachers continue to learn to teach

during their first year through trial and error and subsequently from their experiences. Teacher education program goals are seen as being too high for new teachers who have no means to carry out the lofty ideals on the job.

As Hoy and Rees (1977) set forth in their socialization theory, "Teachers are expected to adopt an orientation consistent with a bureaucratic orientation." This orientation or socialization is the organization's attempt to achieve consensus between the newcomers and the organization. The bureaucratic organization -- the schools -- try to mold ideology and role performance of personnel through a variety of procedures and mechanisms designed to make individual beliefs, values and mores correspond to those of the organization. Regardless of the talk of change and innovation which occurs in education courses, it appears that K-12 schools begin immediately to mold and change neophytes into roles devised to maintain stability. Hoy and Rees reiterate that, "The forces of bureaucratic socialization in schools seem strong and effective." Lortie lamented that the pattern of teacher socialization:

> ...leaves no room for the emergence and reinforcement of idiosyncratic experience and personal synthesis. In neither structure nor content is it well suited to inculcating commonly held empirically derived and vigorously grounded practices and principles of pedagogy. (p.79)

In essence, socialization theorists emphasize the norming process of the environment and de-emphasize

teacher education.

Cognitive Developmentalist

The third major theory of how teachers learn to teach is the cognitive developmentalist perspective. According to this theory, the teacher is an active learner. The teacher is viewed as "unfolding" in the process of becoming a teacher. These changes are noted over a period of time.

The developmental theorist employs a cognitive developmental perspective in teacher education. The cognitive developmental theory presumes:

1. All human beings process experience through cognitive structures called stages -- (Piaget's concept of schemata).
2. Such cognitive structures are organized in a hierarchical sequence of stages from less complex to more complex.
3. Growth occurs first within a particular stage and then only to the next stage in the sequence.
4. Growth is not automatic nor unilateral but occurs only with appropriate interaction between the human being and the environment.
5. Behavior can be determined and predicted by an individual's particular state of development. (Sprinthall and Thies-Sprinthall, 1980, p.279).

Studies of adult performance have found that persons who function at higher, more complex, stages are shown to

function more successfully. Traditional measures of academic scholastic aptitude did not predict success but estimates of cognitive development did. Thies-Sprinthall (1980) reports that several teacher education studies have reached similar findings. The studies indicate that there was a strong positive relationship between judgment level and role-taking. Studies have pointed out that teachers at higher stages of moral reasoning can think and act at a more complex role-taking level. The developmental theorists believe that the quality of how a person functions is determined by the complexity of one's own cognitive structure.

Oja (1981) recommends that teacher education programs use the developmental theory to strive for increased conceptual complexity in preservice teachers. She suggests that, "Teacher educators may utilize their knowledge of the developmental needs of the teachers with whom they work to plan programs geared to promote development." She also strongly urges that,"the explicit goal of teacher education is to address teachers' cognitive structures..."

Floden and Feiman (1981) postulate that the developmentalist theory will enable teacher educators to view prospective teachers at the lower stages of development in a different way. Rather than looking at teachers' characteristics in terms of their present worth, they can be seen as merely steps towards an end. The early or lower stages of development have value on their own, because of

the relationship to the higher level stages. They feel that the developmentalist theory can be used to assure that the success of a teacher education program should not be measured against that of the finished product.

In the developmental theorists' view, teacher education should create differentiated curriculum and instruction to provide for varied levels of developmental concepts. Developmental stages then could be matched with particular instructional procedures. In essence, cognitive developmental theorists suggest that it would be wise to find out at what conceptual developmental stage a prospective teacher is before instruction begins and then instruction can be provided at that level. At this time, however, methods or techniques to assess conceptual stages are not readily available.

Summary

The cognitive developmentalist theory is emphasized in this study, even though the technical training and socialization theories need to be acknowledged, understood, and accounted for in teacher education. A teacher education program based on the technical training theory will only produce a technician and not a professional. Programs emphasizing the socialization theory are designed to change the individual through mediating the environmental influences. The environment is essentially the determining factor. It would appear, however, that teacher education programs need to be designed to match the levels

of prospective teachers' cognitive development. Progress can be monitored and assessed towards these ends in the form of examining the teacher candidates' cognitive framework, their developmental level and subsequent change.

If a goal of teacher educators is to reconstruct student cognitive framework, then teacher education can be improved by planning instructional programs that further the cognitive development of teacher education students. Thus, if cognitive development is accepted as a necessary component in teacher education planning, the second section in this chapter presents a discussion of cognitive change.

Cognitive Change

Introduction

A recent predominant belief of teacher educators is that cognitive change grounded in the developmentalist theory of teacher education is a vehicle for improving teacher education programs. In this view, the goal of teacher education is to change the cognitive framework of the teacher education students. This change can be viewed from the prospect of the teacher candidate entering instruction as a novice and aspiring to be an expert. Novice-expert research is discussed first in this section. Then the novice-to-expert change is examined from the perspective of the acquisition of knowledge, knowledge structure and organization, and schema theory.

Expert-Novice

Expert-novice research is relatively recent. DeGroot (1965) is considered to be one of the leaders in the field. A novice knows very little about certain subject matter (referred to as low-knowledge) while an expert knows a great deal (referred to as high-knowledge). The novice-expert concept can be seen as a continuum. It is not realistic to consider anyone an absolute novice or an absolute expert. The range between a novice and an expert is wide. While the expert status is not achieved quickly, the novice-expert state is relative. One can be a novice in some areas of knowledge and an expert in others. One can be an expert while associating with one group of individuals but become a novice in a different group.

DeGroot's (1965) studies in chess are considered to be the classic in the field. He hypothesized that experts learn to think in terms of various frameworks. An individual who has high-knowledge is found to possess a better internal context (framework) for adding pertinent knowledge. An individual who has low-knowledge does not possess an appropriate framework to compile information. Expert-novice reports can be related to instructional settings.

According to Cazden (1976), the knowledge of novices is not simply an incomplete version of the knowledge of the expert or mature learner, but it is also qualitatively different. After a series of experiments, Voss (1977)

concluded that domain-related concepts of a high-knowledge individual are more differentiated than the concepts of the low-knowledge individual. If one assumes that the meaning of a concept consists of the relationships of that concept with other concepts, then the conceptual structure of a high-knowledge individual (expert) may be assumed to have more concepts and more interrelationships among them.

This hypothesized difference has three implications: (1) the highly knowledgeable person is able to identify knowledge-related material more accurately and more quickly than the less-knowledgeable individual (a difference that produces a more precise encoding and storage of information); (2) because of the superiority in storage precision, the deciphering is made easier for the high-knowledgeable person; and (3) the differences between the high-and low-knowledge person suggests that depth, or level of processing differences exist at a semantic level. These differences are characterized by encoding uniqueness according to Lockhart, Craik and Jacob, (1976).

A second conclusion from Voss involves the role of context. The high-knowledge individual not only has a much greater knowledge of contingent relations but is also more adept at using this knowledge. In low-knowledge individuals, context can provide barriers in acquiring new information. This suggests that providing more information successively in a classroom about a particular

subject could present increasing difficulty for persons with relatively poor understanding of the information. In other words, giving more information does not necessarily produce greater understanding.

Also, high-knowledge individuals recall information more readily than low-knowledge individuals. They are able to make more appropriate predictions regarding events that would occur under a given set of circumstances. This indicates that knowledge of a given domain builds up an internal context that the individual is able to use when domain-related information is presented. Low-knowledge individuals lack the appropriate internal framework for understanding external events due to their knowledge structure.

The idea of making a connection between old and new knowledge relates to the findings of Bransford, Nitsch, and Franks (1977). They concluded that experts learn to think in terms of various frameworks. With a sufficient framework, experts no longer need explicit, specific, and contextual support to understand something. This framework is referred to as decontextualization. The expert may eliminate the need to perform certain previously necessary activities. Intermediate steps simply drop out. Of course, these may return under conditions when one again confronts something especially difficult. The automatization that accompanies increasing expertise is therefore assumed not simply to involve the process of

performing the same activities faster and faster. Lewis' (1981) studies in math substantiated this. He concluded that people do not necessarily get better just by doing something repetitiously. Appropriate conceptual frameworks, more than rapidity, enhance "expertiseness."

Larkin (1981) came to a similar conclusion. She does not think that the ability to generate more information automatically captures everything important in expertise. Experts clearly do more clever things such as planning or using alternative problem representations. The expert is capable of being more insightful or of "seeing" more than the novice. Experts automatically generate a great deal of qualitative knowledge about the problem. She hypothesized that novice problem solvers assess, along with a principle, some general statements of the condition for applicability and they explicitly match these against the current problem representation. In contrast, expert problem solvers assess these conditions automatically as part of the conditional sides of their specific productions. These statements are consistent with the fact that novice subjects spend more time trying to determine whether a particular principle is applicable than do the expert solvers. The experts have a framework from which to draw and novices do not.

This was shown when Champagne, Klapfer and Gunstone (1982) and Chi, Glaser, and Rees (1981) investigated students' knowledge of physics. It appeared that both the

experts and the novices use some of the major physical laws as frameworks to form their knowledge schemata. Unlike the novice, the expert's schemata of physical principles include statements of the major physical laws which are highly abstract and express relationships of great generality. Included with each principle are statements of the conditions under which the principle applies. Each principle has an associated schema, which is oriented by the content and applicability conditions of the principles.

Spiro (1979) paralleled the expert-novice studies of good and poor readers. He reported that the novice--the less able reader--tends to focus on decoding of letter sounds, thereby decreasing comprehension. He attributed this tendency to an insufficient amount of prior knowledge regarding the text and a misconception about the nature of reading comprehension in general. The better reader--the expert--possesses more refined or complete cognitive frameworks in both areas. Flower and Hayes' (1981) Matsuhasi's (1981) and Perl's (1979) studies in writing produced similar results. Novices unable to conceptualize a total structure for the entire writing task focused on writing individual sentences.

These novice-expert studies strongly suggest the need to attend to the learners' cognitive framework. Glaser, Pellegrino, and Lesgold (1978) feel that the problem of instruction is to characterize the knowledge structures of the expert as compared with the knowledge

conceptualization of the novice. The novice then can be brought closer to the expert by means of some instructional form.

Briefly, the group of recent studies in the expert-novice area yield findings that directly relate to education. Studies show that an expert has an internal structure in which new knowledge can "fit into" the old. Novices lack this framework. Instructional planning needs to attend to the learner's internal cognitive framework. In light of this research, there is a strong linkage between the cognitive developmentalist theory of teacher education and the expert-novice conceptual framework.

Acquisition of Knowledge

From the expert-novice research there is evidence to substantiate that knowledge develops within a conceptual framework. The acquisition of knowledge is a complex phenomenon. This study examines information pertaining to the acquisition of knowledge from a historical aspect and from the knowledge theories of Piaget, Vygotsky, Nelson, and Norman.

Knowledge has been a standard topic of discussion for centuries. From Plato's theory of recollection to Aristotle's theory of cognitive function, philosophers have contributed their theories on the origin and development of knowledge. Broudy (1977) believes it is the educator's task to unite the pupil with the knowledge.

What is the basic process of acquiring knowledge?

This problem has been a central focus of theories for over a century. Schools of psychology--Structuralism, Functionalism, Behaviorism, Gestalt, Non-Behaviorism, and Information Processing--have attempted answers to this problem.

One of the oldest known processes of acquiring knowledge is the Socratic method. Collins (1977) described this method as a student learning three kinds of things: (1) specific information about a variety of cases, (2) causal dependencies or principles about these cases and, (3) a variety of reasoning skills. This method is not limited to any specific body of knowledge but is a method to force students to reason for themselves.

Piaget (1928) contended that young children are less conscious of their own thought processes and less able to introspect and evaluate such processes than the older child or adult. It is logical to conclude that the younger the human being, the more poorly organized, incomplete, and inconsistent knowledge is in comparison to the inferential complex reasoning system attributed to adults. To expand further, it would seem logical to think that the response to knowledge from childhood to adulthood would be a purely natural outcome of maturation. Osherson and Markham (1975) offered evidence that this is not the case and substantiated the belief that this more complex processing of knowledge is dependent upon formal school intervention.

According to Vygotsky (1962), who discussed the development of knowledge in his classic work Thought and Language, there are two phases in the process: (1) automatic conscious acquisition and (2) a gradual increase in conscious control over that knowledge. Although he acknowledged the necessary role of Piaget's internal maturation in development, he believed that formal and informal education strongly influences knowledge development.

Voss (1977) believed that the acquisition of knowledge should be looked at as the interaction of the knowledge and skills the individual brings into and uses together with the information and demands of the particular situation. Assuming that knowledge is acquired from experience and that new information is assimilated into an already existing conceptual structure, the problem of how we obtain new knowledge is not a simple one. A simple answer cannot be given.

Nelson (1977) felt that the basic process is the same throughout development for all age groups. Knowledge acquisition involves the construction of a functional core meaning and its relation of the novel event to other previously known events within a conceptual system. Identifying attributes are added which distinguish it from similar concepts. Then this new knowledge is given a name. Concepts are thus organized and interpreted in terms of larger event structures which have been called

scripts or frameworks. These enable human beings to make predictions about recurrent events. Human beings possess the framework within which concepts can be understood.

Brown (1977) agreed that there is a fundamental continuity to human conceptual development. As previously noted, the basic way knowledge is acquired is through the formation of increasingly rich event structures and scripts which allows interpretation of the new and prediction in light of the familiar, to form an organizational structure for a personal universe. The ability to manipulate this knowledge may be determined in modern society by the traditional school settings. Without the intervention of formal schooling, differences between adults and children would reflect the increasing richness and diversity of human experience across the life span, rather than different styles of thought promoted through formal schooling.

The current view of cognitive theory may be best characterized as the information processing approach which has been the psychologists' theory for the last decade. This approach offers the analogy of man-machine, or brain-computer. Even though we can accept this analogy as an improvement over the simplistic processing models offered by stimulus-response theory of the preceding decade, it should be remembered that the computer scientists' systems are artificially contrived, while our systems are evolved naturally. While their systems are passive, ours

are active. The role of emotion, personality and social factors in determining the questions appropriate to human beings are not defined in artificial systems (Shaw and Bransford, 1977).

Norman (1978), using cognitive theory, suggested that there are three ways to acquire new knowledge. In substance, he expanded Piaget's theory, and gave different "names" to the processes. First, new knowledge can be added to the framework provided by existing knowledge modules. This mode of acquisition can be called "accretion." Second, new knowledge modules can be formed, reconceptualizing knowledge about a topic. This can be called "restructuring." Third, existing knowledge modules can be made more efficient by specializing the information contained within them for the particular task required of them. This mode can be called "tuning."

In general, accretion is necessary to provide a data base upon which appropriate knowledge modules can grow. It is a straightforward addition of knowledge and it is the type most studied. Accretion is tested by a conventional recall and recognition technique. The restructuring load is characterized by new insights into the structure of a topic. It is illustrated by the Eureka principle, and the phrase, "Oh, now I understand." It is possible for restructuring to take place in the complete absence of new information. In the tuning mode, the repeated use of the knowledge seems to be required. Tuning

can occur over the lifetime. The individual adjusts the information acquired and eliminates unnecessary variables. Tuning requires continuous activity. The individual or student cannot be passive but must actively seek to acquire knowledge.

The findings of knowledge acquisition which are applicable to teacher education are offered by Wyer (1977). He found little evidence to support the hypothesis that persons tend to seek and attend only to information that supports their preconceived attitude towards an issue. He and Schwartz (1969) did find that when a person receives verbal information with which he is already familiar, he may ignore interpretations that are inconsistent with the information previously acquired. Also, if the recipient of information sees the person imparting the knowledge as one who is credible, a greater degree of knowledge will be received.

In summary, theories regarding the acquisition of knowledge can be traced historically from Plato's theory of recollection, to Piaget's human internal maturation, to the Vygotsky's automatic and conscious process to Nelson's event structures, to Norman's accretion, restructuring and tuning. The acquisition of knowledge is a complex phenomenon without simple or complete answers. Since structuring knowledge within a framework leads to a greater degree of expertise, more information concerning knowledge structure and organization is provided in the following

section.

Knowledge Structure and Organization

A unit of knowledge is known as a "schema." This term is prominently used in discussions of knowledge. Simply stated, a schema is a representative concept stored for memory. More recently, other terms like "script" or "frame" have been used. Bartlett, in the 1930's used the term, Piaget used it in 1952, Kagan in 1971, and Rumelhart in 1975. Even though Bartlett is acknowledged as the father of the term schemata, Kant used the idea of schemata in similar ways in Critique of Pure Reason in 1787.

Basically, Piaget defined schema as a regular structure of action or an organized sequence of operations such as found in a computer program or routine. He also noted that schemata may be connected to each other in hierarchical systems. Eckbald (1981) described this one unit - schema - as having smaller structural units which, in turn, constitutes a more superordinate structure. Piaget's theory of knowledge acquisition comprised two central ideas: (1) knowledge as assimilation into structures and (2) self-regulation or equilibrium. Gallagher and Reid (1981) described this as when one assimilates or incorporates elements of their environment into their current physical or psychological structures, while at the same time, the individual accommodates this information into their cognitive framework and thus equilibrium is attained.

Bartlett (1932), in his classic book entitled Remembering, believed that when people learn, what they learn must fit into some kind of abstract system or "schema." New knowledge is not a mere discursive listing of simple instances. More recent research supports Bartlett's views that new knowledge can be classified in terms of a highly integrated system of abstract relations. Knowledge is a conceptual system rather than a classification of individual memory patterns.

Other major investigators such as Anderson and Bower (1973), Kintsch (1974), and Norman (1975) also used such a representation to characterize organization of knowledge. Although Minsky (1975) referred to "frames" and Shank and Abelson (1977) used the terms "script" and "plan," all of these terms connote similar concepts.

By whatever name, researchers agree on how information is organized. There are four essential characteristics of schema which combine to make a powerful representation of knowledge and memory: (1)schemata have variables; (2) schemata can mesh with one another; (3) schemata represent generic concepts which taken altogether vary in their levels of abstraction; and (4) schemata represent knowledge rather than definition (Rumelhart and Ortony, 1977).

The term "schema" has brought attention to the fact that our brains contain higher order units and capacities. This cognitive structure can be considered the framework

or network in which our world is seen and interpreted. One aspect of this network is that it can be "unpacked" (Greeno, 1976) when necessary.

Norman, Gentner, and Stevens (1976) refer to the structure of schemata as: (1) providing a framework on which to interrelate different elements of information about a topic into one conceptual unit; (2) consisting of statements about important features of the unit: the functions of the unit, the rules for selection, and rules for use; and (3) containing conditional statements and sets of events that are to be performed according to the status of the conditional state. (pp.183-184)

A number of schemata may be combined into a single higher level schema which in turn can be applied to a more complex situation. The use of old schemata constitutes an efficient way to introduce new information about a complex and unfamiliar area.

What are the implications for education? The purpose of instruction is to provide the kind of knowledge that will prove useful to a person in processing new information and dealing with new situations. The function of schemata is to match new inputs in terms that can be comprehended. The generation of new knowledge structures and the application of these structures are regarded as the principal goals of instruction. Whatever the instructional device, existing knowledge is used in and required

for the acquisition of new knowledge. The fitting into preexisting schemata or the decontextualization of the old with the new is defined as assimilation (Anderson, 1977).

However, it is impossible for human beings to store a schema for every conceivable scene, event, and message. Few episodes are identical. People are different and changeable. Everyone comes to similar situations with different perspectives and different intentions. They play different roles. People do not function by selecting the "right template" from the great mental warehouse of templates of prior experiences. The process is dynamic.

The conclusion is that the assimilative use of schemata must involve constructing interpretations. Every situation contains at least some novel characteristics. The broader the range of situations a schema can cover, the more it will fit into any one situation. A concept may have many different meanings for a number of settings. As the preexisting schemata interrelate with the new, there is growth and change of schemata. This process is referred to as accommodation.

A semantic structure of a particular subject, i.e., reading instruction, can be graphically constructed using a tool known as semantic networking or mapping. Very simply, a semantic map illustrates a set of linking representative relationships between concepts. Johnson and Pearson (1978) identified four relationships represented

in a schema: (1) class, (2) example, (3) attribute (properties), and (4) related concepts. Figure 1 illustrates an example of a semantic map of a dog (Johnson and Pearson, 1978, p.36). This semantic mapping structure provides a way to illustrate how one conceives of a certain subject or body of knowledge. The mapping techniques emphasizes modification and individual capabilities which provide positive features and techniques for assessing students' individual instructional preconceptions and subsequent change.

In summary, schema theory is a dynamic constructive process. Schema formulations emphasize the patterning of elements, rather than the elements themselves. Schema change can be seen as the acquisition of knowledge and not the aggregation of information. The recent attention to schema as the basic structure of knowledge not only provides a powerful theory to explain information processing during instruction, but is a method to assess student conceptual change.

Schema Theory and the Learner

Schema theory has developed into a specific field to explain the acquisition of knowledge in spoken and written language comprehension. This psychological phenomenon plays a prominent role in the field of education. The schema-theoretic approach provides a direction for the inquiry into how a learner uses acquired knowledge to construct meaning from written or spoken language.

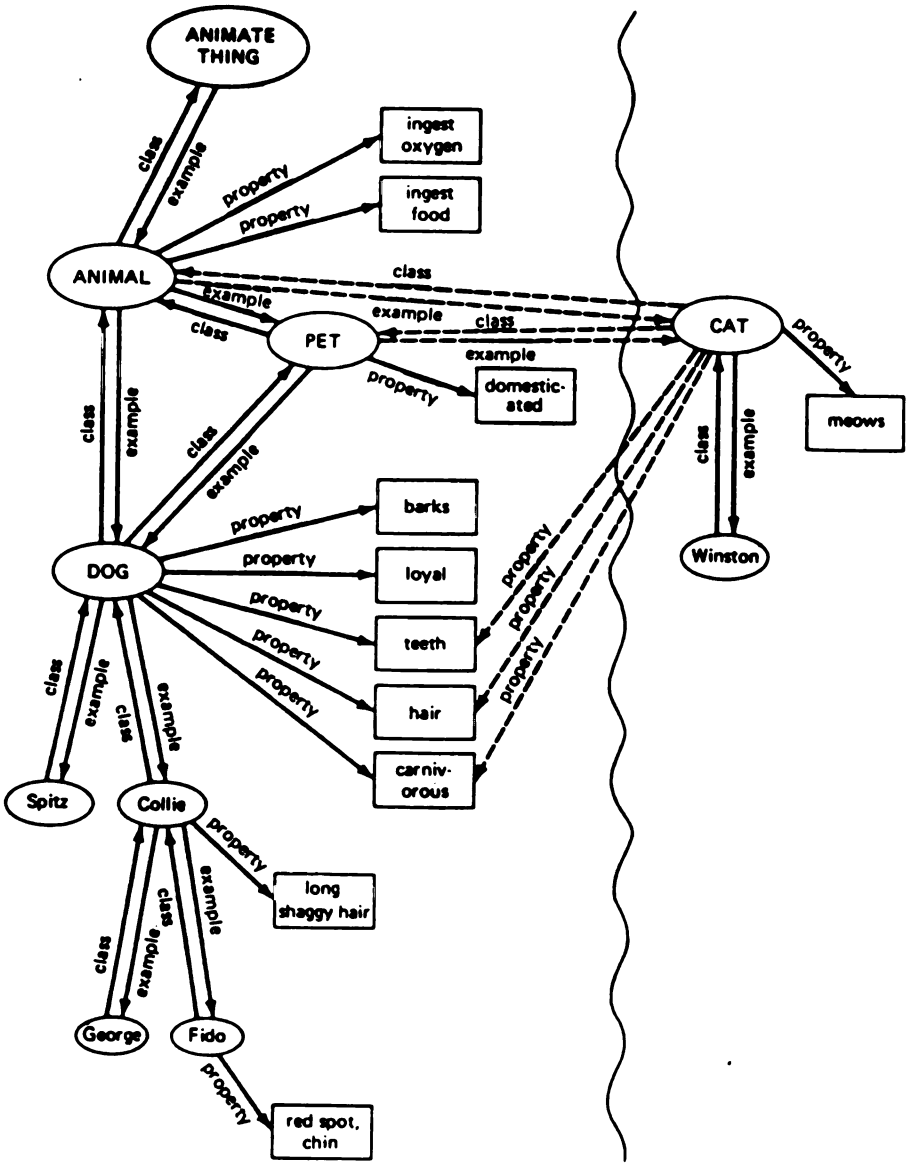


Figure 1 Semantic Map of a Dog

A basic assumption of the schema-theoretic approach, according to Adams and Collins (1977), is that spoken or written text does not alone carry meaning. The text provides direction for the learner to retrieve or construct its meaning from the learner's prior knowledge. The terms "reader" and "text" need to be considered in the broader sense of "learner" and "instruction." The function of schema theory is to "specify how the reader's knowledge interacts and shapes the information on the page and to specify how that knowledge must be organized to support the interaction." The hierarchical structure of concepts and schema theory account for the process of the interpretation principle. Every input must be mapped against some schema and all aspects of that schema must be compatible with the input information.

This results in two basic modes of information processing (Rumelhart, 1976). The first mode is "bottom up" processing. Data information enters the cognitive structure through the best fitting bottom level schemata. As these schemata converge into higher level schemata, they are activated. In this way, information is led upwards through increasingly high levels of interpretation. The other mode, "top down" processing, works in the opposite direction. This occurs when the cognitive structure seeks information that fits satisfactorily into the higher order schemata. In the language comprehension schema theoretic account, both "top down" and "bottom up" processing are

occurring simultaneously. Data needed to fill out the schemata become available through "bottom up" processing. "Top down" processing resolves ambiguities and allows one to select between alternative interpretations of incoming data. It is a critical point in the schema theoretic account of language comprehension that a coordinated activity of "top down" and "bottom up" processing should occur at the same time. As Adams and Collins (1977) say, "As 'top down' and 'bottom up' processes operate simultaneously at different levels of analysis, they work to pull the various fragments of knowledge and information into a coherent whole."

Therefore, comprehension depends upon the ability to interrelate knowledge and incoming data information both within and between levels of analysis. The schema-theoretic approach supports these interactions through a single stratified knowledge structure and the basic "top down" and "bottom up" processing mechanisms.

In the discussion of schemata pertinent to comprehension, Anderson, Pichert, and Shirey (April, 1979) refer to two general kinds of schemata -- the textual and the content. Textual schemata refers to discourse, written or spoken. Content schemata refers to existing knowledge. Their findings indicated that content schemata is more important to comprehension than textual schemata. They also report two findings which emerge from the research: (1) inferences are made consistent with present schemata;

and (2) more contextual information is recalled if it is seen as important to present schemata.

Even though shortcomings of schema theory for individual differences and the assessment of knowledge structures have been pointed out by Spiro (1980), schema theory continues to offer substantial evidence to provide a vehicle towards future instructional improvement.

Summary

This section on cognitive change suggests that there is a qualitative difference between the knowledge of an expert and the knowledge of a novice. An expert's knowledge frameworks are different than a novice's and is not just a matter of having more knowledge. Knowledge acquisition was discussed with respect to cognitive theory by accretion, restructuring and tuning. This led to the schema structure and organization of knowledge. Schema-theoretic approaches were then discussed to illustrate the relationship between learner and instruction.

Summary of Literature Review

This chapter contained two areas of research literature: (1) theories of teacher education and (2) cognitive change. Teacher educators were assumed to teach teachers to teach. Three major theories about how this teaching should proceed were presented. They included the theories of (1) technical training, (2) socialization, and (3) cognitive developmentalist. Since the cognitive developmentalist theory and this study both focus upon

cognition, this theory was emphasized in the research discussed.

Section two of the chapter presented information about cognitive change. This field of research was approached from the aspect of the teacher candidate beginning as a novice and aspiring to be an expert. The novice to expert change was investigated from the perspectives of the acquisition of knowledge, knowledge structure and organization, and schema theory.

CHAPTER III

METHOD

Introduction

The purpose of Chapter III is to present the method, procedures, and data collected in the study. This descriptive study investigates teacher candidates' preconceptions of reading instruction and their subsequent cognitive change in response to reading methods instruction.

Procedures

The procedures include information pertaining to the population, the selection of the subjects, and the assessment measures.

Population and Sampling

Program. The subjects of the study were enrolled in the Multiple Perspectives Teacher Education Program at Michigan State University. This alternative program stresses teacher decision-making. Emphasis is given to teacher decisions about instructional design, instruction, individual differences and group development in light of realistic professional pressures and constraints.

The Multiple Perspective Program was chosen for the following reasons:

1. The enrolled teacher candidates recently had made a serious commitment to become teachers as evidenced by their decision to enroll in the program.
2. The structure and format of the Multiple Perspectives Program made it possible for all the following to occur on the same day:
   a. observation of the reading methods instruction;
   b. observation of the teacher candidate teaching reading; and
   c. a "reflective" debriefing session with the teacher candidate after the implementation of the reading lesson.
3. The teacher candidates received collaboratively planned teacher education instruction. When reading methods and educational psychology were taught, both courses stressed teacher decision-making. The teacher educators planned their instruction together in order to effect this synthesis. Assignments were interrelated and terminology was consistent in both classes. For instance, a pupil's background assignment for educational psychology and a pupil's diagnostic assignment for reading methods were combined into one assignment. Professors in both reading and psychology reviewed terms such as "goal" and

"objective" and formulated common definitions. The process of planning lessons and the lesson plan format were the same for both classes. The professors met with the field staff and communicated detailed information regarding the focus of classroom instruction. The field staff then planned field experiences to relate college classwork with public school field experiences. Direct teacher explanation of instruction was stressed in the program. The teacher candidates were taught to have their students become metacognitively aware of their own learning processes. This instruction provided linkage or the "connections" between the teacher education instruction and practice in the field. The cohesive and collaborative nature of the program presented an ideal place in which to study the conceptual change of teacher candidates.

4. Some teacher candidates involved in this study may have had a previous introductory course in education with classroom observations and/or some experience with children. However, none of the subjects had previously enrolled in courses in reading methods instruction.

Subjects. Thirty teacher candidates began the program in September, 1983. All 30 agreed to be studied. During orientation sessions, 10 students were arbitrarily

assigned to the researcher for field experience instruction and supervision. Four of these 10 students were then randomly selected as subjects. Then the students were identified with the letters A through D to protect their anonymity. Four other students were randomly selected to be alternates in case one or more of the first four subjects left the program during the study. The second set of four received the numbers five through eight. Five would become a subject if A, B, C, or D, left the program, six would become a subject if a second original subject did not continue the program, and so on.

Data Sources

Primary and secondary data were collected in this study.

Primary Data Source. The primary data source for this study was a set of semantic maps of reading instruction constructed by each subject. A semantic map is a graphic representation used to illustrate concepts and relationships between classes, properties, and examples of concepts (Johnson and Pearson, 1978). The maps became the primary data source because they reflected mental framework more accurately than other measures. In order to complete a semantic map, each subject arranged 44 cards of word definers in any manner she deemed appropriate. The definers were chosen from lists of words associated with reading and instruction generated by a graduate class in reading methods. The definers were meant only to

stimulate conceptualization and contained no special theoretical or methodological significance. Examples of the definers are "sight words," "motivation," and "phonics" (see Figure 2).

The researcher trained two other staff members to administer the construction of the maps. The researcher spent 30 minutes two days prior to the construction acquainting the staff with semantic mapping and the instructions for administering it (see Figure 3). The staff members arrived early on the day of the mapping in order to become familiar with the environment and to ask questions. They also observed from across the room as the researcher administered the map to the first teacher candidate.

Thirty minutes were allotted for each administration. Each subject sat at a table with a large piece of paper on it. The administrator told the teacher candidate the directions. Then the teacher candidate took the cards out of the envelope and proceeded according to the directions. Each subject was told that the 44 cards were to be arranged in a manner that seemed logical. There was no right nor wrong arrangement. Any of the original 44 cards could be eliminated and/or additional cards could be created by the subject. Each participant was asked to think aloud for purposes of tape recording the discussion while the subject constructed the map. Each subject was asked to explain orally her completed semantic map of reading instruction.

Education	Curriculum	Direct instruction
Professional	Teaching	Fluency
School	Management	Content
Learning	Motivation	Instruct
Language arts	Explain	Practice
Teacher	Activity	Free reading
Prior knowledge	Seatwork	Skill
Readability	Concept	Comprehension
Expectation	Basal text	Apply
Strategy	Vocabulary	Success
Organization	Phonics	Effectiveness
Goal	Sight words	Monitor
Task	Word analysis	Assess
Objective	Context	Diagnosis
Classroom	Content area text	

Figure 2 Definers used for Semantic Maps

1. This inventory is for research and program development ONLY as described in the consent form.
2. The objective is to find out how you think about reading instruction.
3. Procedure:
    a. look through the word cards
    b. spread out the word cards
    c. arrange the words in the arrangement or structure that makes sense to you about your thinking of reading instruction
    d. talk aloud as you do it to explain your thinking
    e. make arrows or lines between the words to indicate your thinking as you are doing the arrangement or after you have completed it.
4. You do not need to use ALL the cards. Use ONLY the ones you need. Ask for others if you want.
5. There is NOTHING right and/or wrong in what you do.
6. This has NOTHING to do with your grade for the class.
7. Thank you VERY much for your time.

Figure 3 Semantic Mapping Instructions to Students

Secondary Data Source. To support and explain conceptions found in the subjects' semantic maps, three data sources served as secondary data sources. They were: (1) the Proposition Inventory, (2) reading lesson debriefing sessions, and (3) reading definitions. These sources were used to triangulate data from the primary source of the semantic maps. Triangulation is a process based on an ethnographic principle in which findings from one source are considered to be more reputable when they can be confirmed or justified by reference to other sources.

1. The Proposition Inventory (Duffy and Metheny 1978) is a Likert scale instrument used to measure teachers' reading beliefs. This 45 item inventory surveys five conceptual dimensions of reading. The five general categories of beliefs about reading are as follows: basal textbook, linear skills, interest based, natural language, and integrated whole (see Appendix E). Since the Proposition Inventory measured beliefs, it was hypothesized that it would reflect and support the concepts shown on the subject's semantic maps. The subjects received the following information and directions regarding the inventory: (a) This is an inventory to survey your beliefs about reading; (b) Read each item and decide how you feel about the statement; (c) If you strongly agree with the statement,

circle the letter "a." If you agree, circle the letter "b." If you are neutral, circle the letter "c." If you disagree, circle the letter "d." If you strongly disagree, circle the letter "e;" (d) Do not spend any longer than about 30 seconds thinking about your answer. Leave the statement blank if you cannot decide; (e) If you do not understand a term or word used in the statement, circle it and do not answer it; (f) Be as honest as possible with your answers; and (g) The completion of this inventory in no way influences your grade in this class.

2. The reading lesson debriefing sessions took place after the researcher observed the subject teaching a reading lesson. Since the debriefings probed the subject's thoughts, it was hypothesized that data concerning the subject's conceptualization of reading instruction while in direct contact with children would be an additional data source. Each subject taught a reading lesson every Tuesday and Thursday. During the first 10 week term of instruction, each subject taught one below grade-level reader. The second 10 week term each subject taught a reading group using the public school system's mandated basal text series. The researcher observed each subject three times the first term and four times the second term.

After the researcher observed the implementation of each subject's reading lesson, the researcher debriefed the subject regarding the lesson. Each debriefing session focused upon the information processed by the subject and the decisions she made during the lesson. Two questions were part of each debriefing session.

a. What information were you processing during the lesson?

b. What decisions (interactive) were you aware of that you were making while you were teaching?

3. For the third secondary data source, the subjects wrote definitions of reading and of reading instruction in November and in March. The main concepts in the two sets of the subjects' definitions were compared with each other. The definitions were examined to answer questions such as: (a) Were there more concepts in the second definitions than the first? (b) Were they elaborated upon? (c) Were examples given? It was hypothesized that this analysis process would offer the researcher further insight into the subjects' conceptual change regarding reading instruction.

In summary, the subjects of this study were selected from a population of teacher candidates in the Multiple Perspectives Program at Michigan State University. The

primary data source was the subjects' semantic maps of reading instruction. The secondary data sources were the Proposition Inventory, reading lesson debriefing sessions and reading definitions. The secondary data sources provided additional support to primary data source.

Data Collection

Data collection occurred in three phases:

1. pre-instructional
2. instructional
3. post instructional

Pre-instructional Phase

Information from two data sources was gathered during this phase. The first was the Proposition Inventory; the second was the semantic map. During an orientation session of the Multiple Perspectives Program, all 30 students were given the Proposition Inventory. At the conclusion of this session, all students made appointments for the individual construction of the semantic maps. All maps were constructed before instruction began.

Instructional Phase

Five sets of data were collected during the instructional phase of this study. The first data collected focused on the reading methods instruction. The researcher observed the reading methods instruction, assumed the role of a teacher candidate, and took notes on the contents of the presentations. This data was gathered in order to record the main points of emphasis and the particular

definers discussed during instruction. The researcher met with the reading teacher educator to validate the notes she took in methods class.

This set of data also included the semantic map and the Proposition Inventory of the reading teacher educator. The results were used to assist in analyzing the subjects' data. Questions such as the following were asked: Were the subjects' conceptions similar to the reading teacher educator's? Did they become more like his during subsequent mappings? Were the subjects' ratings on the Proposition Inventory like the reading teacher educator's? Did the ratings come closer to his on the second inventory? The assumption was made that the reading teacher educator's instruction in reading methods would reflect what he had described on his semantic map and on his Proposition Inventory. Thus, the subjects would tend to change their previous concepts and begin to think about reading instruction somewhat as he did.

The second set of data in the instructional phase was the subjects' debriefing sessions. This phase was accomplished in order to note the subjects' perceptions of reading instruction after they began to teach children reading. Each subject tutored one student in reading during the first ten weeks and instructed a small group of students in reading during the second ten weeks. The researcher observed the subjects teaching these lessons three times during the first term and four times during

the second term. After each observation, the researcher debriefed the subject for 15-20 minutes. The lessons and debriefing sessions were audio-taped and transcribed. The debriefing sessions offered data on how the subjects were thinking about reading instruction in actual teaching situations.

For the third data set, the subjects constructed two interim semantic maps. These sessions took place in late November and early February. The procedures for administration were the same as in September. However, two additional questions were asked:

1. Can you remember if your map changed from the last time? If so, how?
2. What was the reason for the change?

These questions were asked to see if the subjects were aware of any change and if so, how they described it.

The fourth set of data contained the subjects' written definitions for reading and reading instruction (November and March) to assess change and/or elaborations in their thinking during the instructional phase.

The researcher gathered information about the other teacher education instruction for the fifth set of data. During the study, the subjects took an educational psychology class for the first ten weeks and a classroom organization and management class for the last ten weeks. Course objectives and major instructional emphases were collected from course outlines and class observations.

In addition, the researcher compiled a list of the definers used on the semantic maps that were presented in these classes. This information was gathered to determine whether the subjects related other teacher education instruction to their thinking about reading instruction.

In summary, the following data were collected during the instructional phase: (1) taking notes in the reading methods class; (2) the researcher observing the subjects' reading lessons and holding debriefing sessions; (3) administering two interim semantic maps; (4) collecting definitions about reading; and (5) gathering information about other teacher education instruction.

Post Instructional Phase

During the last week of the second term of the reading methods instruction, the subjects completed the Proposition Inventory again and constructed a fourth semantic map. The procedures followed in the fall were used again.

Data Analysis

All the data sources were used to determine the subjects' preconceptions and their subsequent conceptual change. Data were analyzed from the following sources:

Instructional Sources

1. Reading Methods Class
2. Other Teacher Education Classes

Primary Source

1. Semantic Map

Secondary Sources

1. Proposition Inventory

2. Reading Lesson Debriefing Sessions

3. Reading Definitions

Instructional Sources

Reading Methods Class. The researcher analyzed her notes taken during the twenty weeks of the reading methods class instruction in two ways. First, each definer was noted when it occurred in the notes (see Figure 4). For example, the definer "concept" was part of the instructional presentation five times and the definer "strategy" was part of the instruction four times. This information was grouped together in relationship to when each semantic map was administered. For instance, between the construction of Maps #1 and #2, 29 definers were part of the reading methods class instruction. Then this information was related to the subjects' maps. Were the 29 definers included on the subjects' second map? Did the subjects arrange and discuss the definers consistent with methods instruction? Second, the researcher established main instructional themes on major points from emphasized topics in the notes and discussions with the reading teacher educator. This information was related to each data source. Did the subject show evidence of instructional incorporation?

Other Teacher Education Classes. The researcher also determined the major instructional themes and definers

Definer	Times Used	Definer	Times Used
1. Activity	3	15. Goal	1
2. Apply	6	16. Instruct	4
3. Assess	7	17. Learn	1
4. Basal text	2	18. Motivation	1
5. Comprehension	2	19. Objective	4
6. Concepts	5	20. Phonics	3
7. Content	1	21. Practice	6
8. Context	5	22. Prior knowledge	1
9. Curriculum	1	23. Professional	1
10. Diagnosis	4	24. Sight words	6
11. Direct instruction	1	25. Strategy	4
12. Effectiveness	1	26. Task	5
13. Fluency	1	27. Teacher	1
14. Free reading	1	28. Teaching	2
		29. Word analysis	3

Figure 4 Definers used in Instruction (Segment 1)

used in the educational psychology and classroom organization and management classes from the class objectives, notes taken in class, and discussions with the instructors. These were related to the data sources in the same manner used in reading instruction.

Primary Data Source

Semantic Maps. The semantic maps were analyzed to determine subjects' preconceptions, how they incorporated reading methods instruction, and their subsequent conceptual change. The emphasis was on describing the subjects' conceptual framework qualitatively rather than on labeling conceptions and/or on labeling changes as positive or negative.

Three arbitrary decisions were used to analyze the subjects' preconceptions and their subsequent changes:

1. The general geometric shapes were characterized as: (a) grouped, (b) connected, (c) hierarchical, (d) branched, or (e) interrelated. A map was characterized as "grouped" when the subject categorized definers in clusters without relationships between the clusters. When the subject linked definers together with an arrow on the map or when they associated them together in the discussion, the map was characterized as "connected." A map was "hierarchical" when several definers were vertically and singularly chained together with

arrows. A map was "branched" when several definers were designated as modifying another definer. A subject's map was "interrelated" when the subject constructed or discussed complex interrelated connections between or among definers, as when a subject had definers modifying each other or used the same definer in more than one place and/or expressed the desire to have the map constructed in more than one arrangement. Interrelated maps were viewed as evidence of conceptualization of reading instruction beyond that presented in class instruction.

2. Each successive geometric shape of a map was considered to be a different conceptualization. For example, if a subject constructed a grouped map during the first mapping session and then a connected map for her second map, conceptual change had occurred. If a subject's map went from branched to grouped, change had occurred.
3. The subject's discussion of her maps was analyzed along with the physical maps themselves. The discussion offered more information about what the subject was thinking than what was physically presented on the map. If the subject did not mention the definers from her map or if she repeated them in a list, a different conceptualization was assumed than if she elaborated upon their

meaning, or if she discussed various relationships between the definers. Three criteria determined the extent of incorporation of reading methods instruction with the subjects' conceptual change:

1. Definers or groups of definers from the subjects' maps were compared with definers emphasized in instruction. If the subject added definers after they had been presented in class, it was assumed that conceptual incorporation with reading methods instruction had occurred. It was assumed that such conceptual incorporation had not taken place if the subjects did not add definers presented during instruction to their maps, or if they continued to use definers in a manner inconsistent with instruction.
2. The subjects' discussions of the maps were analyzed. If the discussion of the definers was consistent with instructional emphasis, incorporation had taken place. If definers were ignored or not explained in a manner consistent with instruction, conceptual incorporation had not occurred. If the explanation offered further relationships or notions beyond instructional presentation, a change in conceptualization was assumed to have taken place.
3. The subjects' maps were compared to the reading

teacher educator's map. Connections among groups of definers and general map structure on students' maps which was similar to the professor's map was indicative of incorporation of instruction. A subject's map that is unlike the reading teacher educator's did not necessarily indicate either a lack of incorporation of instruction or an incorrect conception. Different arrangements may be constructed and still conform to instructional emphasis.

In summary, the subjects' semantic maps were analyzed using criteria to: (1) identify preconceptions; (2) describe ensuing conceptual changes; and (3) relate the extent to which instruction was incorporated into that conceptual change.

Secondary Data Sources

Three secondary data sources were used in this study to substantiate or refute findings from the subjects' semantic maps. They were: (1) the Proposition Inventory, (2) the reading lesson debriefing sessions, and (3) the reading definitions.

Proposition Inventory. The results from the Proposition Inventory were transferred to a rating sheet. The nine statements from each of the five general areas measured by the instrument were grouped together. The five areas were basal text, linear skills, interest, natural

language, and integrated whole (see Table 1). For instance: statements #1, 6, 11, 16, 24, 27, 32, 36, and 41 pertained to the area of basal text. Thus, those numbers were grouped together on the rating sheet. Then each response was converted to a numerical score. An answer circled as "strongly agree," received +2; "agree," received +1; "neutral," received 0; "disagree," received -1; "strongly disagree," received -2. An undecided statement was noted with a dash. If a statement had a word or term circled to indicate that the subject did not understand it, the word was written on the rating sheet.

The nine ratings from each of the five areas were added together to yield one score. For instance, if the basal text area converted numerical scores were +1, +1, 0, +2, +1, 0, -1, +1, -1, the net score for that area was +4. To illustrate five net scores are plotted on a sample bar graph (see Table 2). Note that the net scores were "0" for basal text, +2 for linear skills, "0" for interest, +6 for natural language, and +7 for integrated whole. Thus, this example shows neutrality of belief in the areas of basal text and interest, a slight agreement of belief in linear skills, and very strong agreement in natural language and integrated whole. No areas showed disagreement.

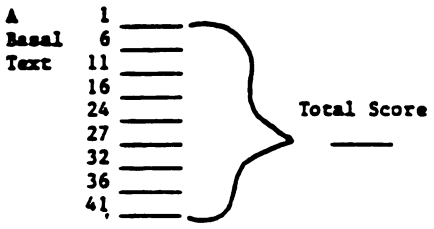
The scores from the Proposition Inventory were analyzed in two ways to assess the subjects' preconceptualization and subsequent change, and the incorporation of

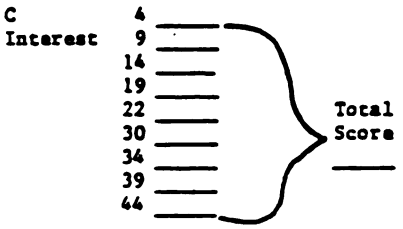
Table 1 Proposition Inventory Rating Sheet

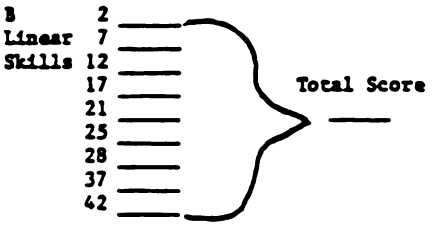
Date_____

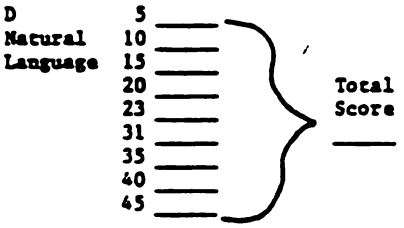
Student #_____

Student Code_____









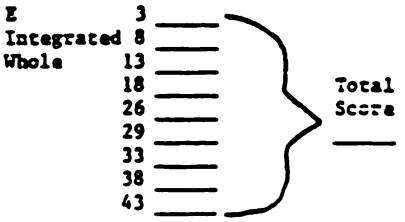
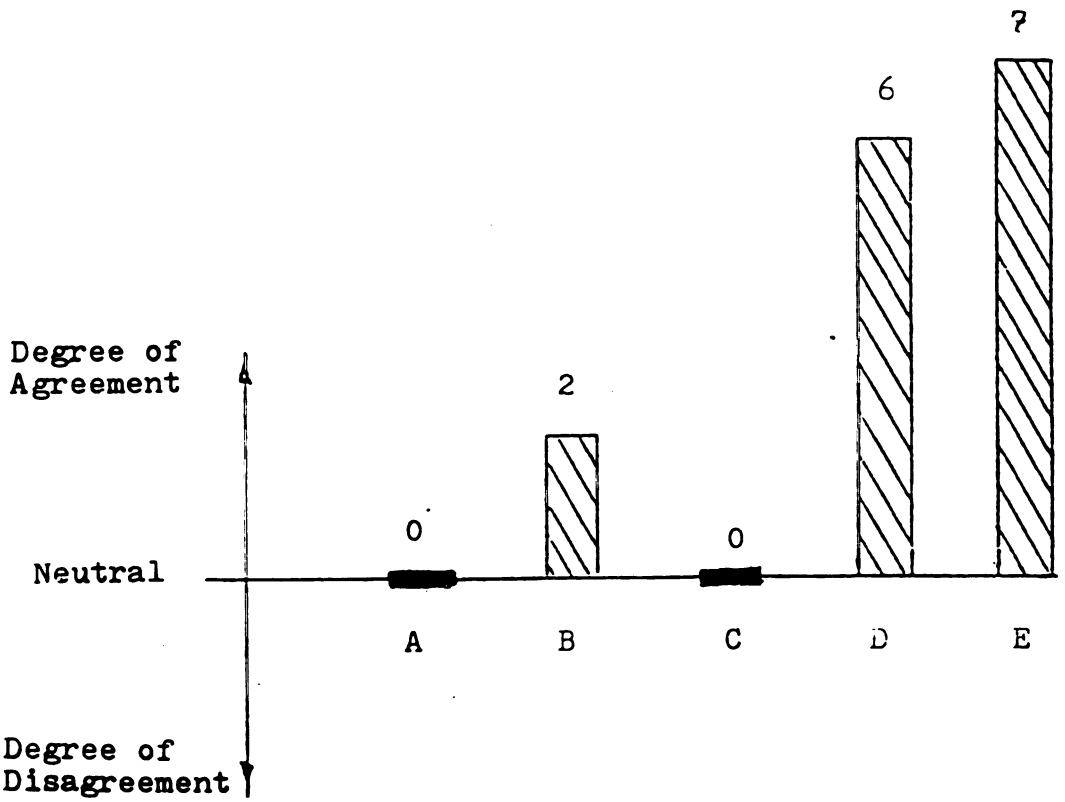


Table 2 Proposition Inventory Sample



A = Basal Text
B = Linear Skills (Content)
C = Interest
D = Natural Language
E = Integrated Whole

methods instruction with the identified change.

First, to determine preconceptualization, the subjects' beliefs were measured in September. To determine conceptual change, the differences between the September and March inventories were noted. Questions were asked such as: What belief areas changed? Which ones remained the same? These results were compared to the results of the semantic maps to determine corroboration or contradiction of the findings. If the ratings on the inventory changed in accordance to the semantic maps and discussions, conceptual change could be substantiated. The subject's inventories were compared with the reading teacher educator's to establish the incorporation of instruction. The subject's net ratings in each area of the inventory were compared with the reading teacher educator's in September and in March. The net ratings between each subject's two inventories were compared with the reading teacher educator's inventory. The researcher noted whether the subject's ratings were closer to the reading teacher educator's in March than in September. The assumption was that the more the subject's ratings became like the teacher educator's the greater the incorporation of instruction.

Reading Lesson Debriefing Sessions. Another secondary data source was the subject's reading lesson debriefing sessions. The debriefing sessions between the subject and the researcher were audio-taped and transcribed.

Specific statements by the subject and in the dialogue between the researcher and subject which related to reading methods instruction, reading conceptions, or continuation of previously discussed reading themes were noted for evidence of incorporation of instruction.

Reading Definitions. The third secondary data source was the subjects' definitions of reading and of reading instruction which were written first during the sixth week and again during the last week of instruction. These definitions were assessed for incorporation of instruction by the number of major themes that related to methods instruction. It was also noted if examples or further explanation was given. Conceptual change was assessed by the addition or elaboration between the first and second set of definitions of major themes in the definitions that were consistent with instruction.

Data Analysis Summary

The data gathered from each subject were described and analyzed to determine the subjects' preconceptions of reading instruction, subsequent change, and the incorporation of instruction assisting in the change. Each subject's data were presented as an individual report in the Appendix (see Appendices A, B, C, D). A summary of each report is in Chapter IV.

The data sources described and analyzed were: (1) Primary Source -- Semantic Maps, (2) Secondary Sources --

Proposition Inventory, reading lesson debriefing sessions, and reading definitions. The analyses used qualitative research techniques. The data were presented as four individual reports and as a summary report of all four subjects.

Interpretation of the Findings

The findings in this study were subjectively interpreted by the researcher. The researcher used the three lines of research reported in Chapter II of this dissertation to interpret the findings: (1) the semantic structure of a map (Johnson and Pearson, 1978), (2) the conceptual change between an active learner and the environment (Floden and Feiman, 1981), and (3) the expert-novice body of knowledge (DeGroot, 1965; Cazden, 1976; Larkin, 1981).

The first body of research used for interpreting the findings was the technique of semantic mapping. Johnson and Pearson refer to four relationships represented in a semantic map: (1) class, (2) example, (3) attributes (properties), (4) related concepts. For the purposes of this study, two relationships -- class and properties -- were used to analyze the subjects' maps. Class relationship refers to the categories into which an object may be placed. For example, classes of a dog are pet and animal. For interpretation purposes in this study, the semantic map definers used as classes of reading instruction included "organization," "education," "school,"

"curriculum," "classroom," and "language arts." A property relationship refers to the qualities included in a concept. For example, properties of a dog include tail, teeth, hair, and four legs. For interpretative purposes, the semantic map definers used as properties of reading instruction included: "phonics," "vocabulary," "sight words," and "word analysis." Depending upon how a specific definer was used, some were considered to denote either a class or a property. Examples of these definers included "diagnosis," "management," and "assess." The researcher looked at each subject's maps and the accompanying discussions to note: (1) inclusion, exclusion, and arrangement of properties belonging to reading instruction; these were referred to as classes of general education, (2) inclusion, exclusion, groupings, and arrangement of properties; these were referred to as properties of reading instruction, (3) relationships and/or integration of classes and properties. An increase in the number of classes and properties, in the number of groups of properties, in the number of relationships and in the number of integrations according to instruction were considered to signal conceptual change.

The second research source the researcher used to interpret the findings was the relationship and interaction between the learner and the environment (Floden and Feiman 1981). The hypothesis was made that the way subjects interacted with or thought about their environment

would result in different conceptions. The environment in this study was defined as the subject's tutee and reading group which she was teaching in the field setting. The manner and extent to which the subject included students in her map and discussion, how the subject talked or thought about the role of teacher and student in the field setting, and the net ratings in the content and student-centered components of the inventory were considered as evidence of how the learner viewed her environment and interacted with it to produce change.

The third area of research used to interpret the findings involved features from the expert-novice research (DeGroot, 1965; Cazden, 1976; Larkin, 1981). Three comparisons were made. First, the difference between a novice and an expert is relative and can be said to exist on a continuum. The researcher subjectively estimated each subject's conceptualization at a low (novice) to high (expert) level four times during the study. A subject had low knowledge if she appeared to conceptualize "less knowledge" than what was presented in instruction. A subject had moderate knowledge if she appeared to possess the same "quantity of knowledge" presented during instruction. A subject had high knowledge if she appeared to possess knowledge that showed her own additional conceptualization beyond instructional presentation. Second, high-knowledge individuals (experts) have qualitatively different -- not just more complete -- conceptual

frameworks than low-knowledge individuals (novices). In the summary of the four subjects in Chapter IV, the researcher compared the subjects' basic conceptual frameworks to assess this feature. Third, high-knowledge individuals (experts) "see" more than low-knowledge individuals (novices). There is a difference in the amount of information that an individual assembles to problem solve and to analyze a situation. The researcher looked for evidence of each subject's problem solving skills and situation analysis proficiency. This evidence included if the subject was able to self-evaluate her own reading lessons accurately or if the subject was able to know how to improve her lessons without instructor assistance. Thus, the researcher used the novice-expert continuum, the qualitatively different framework, and the problem solving and analytical features from the novice-expert research in the interpretation of this study.

In summary, this researcher used three lines of research to assist in interpreting the findings from this study: (1) semantic map structure, (2) the active learner-environment interaction, and (3) novice-expert studies.

Summary of Methods

This chapter presented the methods used in this descriptive study. The methods included the procedures, data sources, data collection phases, data description and analyses, and interpretive method.

The sampling for this study was derived from the population of teacher candidates in the Multiple Perspective Teacher Education Program at Michigan State University. Qualitative research techniques were used to report the findings. The data sources used in this study were: (1) Primary Source -- Semantic Maps, (2) Secondary Sources -- Proposition Inventory, reading session debriefing sessions, and reading definitions. Data were collected in three phases: (1) pre-instructional, (2) instructional, (3) post instructional. The data were presented and analyzed in an individual report for each subject. In a summarative report, all four subjects' data were interpreted according to the three lines of research reported in Chapter II of this study: (1) the structure of a semantic map, (2) the conceptual growth between learner and environment, (3) expert-novice studies. These data were gathered, described, analyzed, and interpreted to generate hypotheses regarding teacher candidates' preconceptions and conceptual change about reading during reading methods instruction.

CHAPTER IV

FINDINGS

Introduction

The purpose of this study was to investigate and describe the ways preservice teacher candidates' understanding of reading instruction change during two ten-week courses in reading methodology. Specifically, the study is designed to investigate teacher candidates' preconceptions of reading instruction and the conceptual changes which occur during methods instruction.

This chapter is divided into three sections:

1. Teacher Education Instruction -- The findings of this study are intricately involved with and emanate from the subjects' instructional exposure during the investigation. First, a major segment of the instruction was concentrated in a reading methods class during the twenty weeks of this study. The content of the course was divided into three segments. Each segment included the instructional content presented between the subjects' construction of each semantic map. Specifically, Segment One included class presentations between the first and second

mapping sessions. This information is considered to be a part of the instructional exposure for the subjects. As an indication of the reading teacher educator's conceptualization of reading, this section also discusses the professor's semantic map and Proposition Inventory. The second facet of the instruction included two other teacher education classes in which all subjects were enrolled. The subjects took the educational psychology class during the first ten weeks of the study and the classroom organization and management class during the second ten weeks. Information regarding these two classes provides the reader with contextual setting before the findings are presented.

2. Subject Summaries -- Summaries of the individual subject's findings are presented. Each summary includes findings from the data gathered in the pre-instructional, instructional, and post instructional phases of this study. The complete reports are in the Appendices.
3. Findings -- The findings from the four subjects' data gathered in the study are presented and then submitted to the research questions. The findings are derived from data analyses and subjective interpretation by the researcher. Each finding is stated and then discussed.

Teacher Education Instruction

Introduction

After a general informational overview of the reading methods course, the major instructional emphases follow in three segments. Each segment describes the instruction that took place between each construction of the subjects' semantic maps. Segment One reports instructional presentations which occurred in the first eight weeks of the reading methods class (between Maps One and Two). Segment Two includes information presented during the next six weeks (between Maps Two and Three) and Segment Three presents major instructional points during the last six weeks. Then, a discussion relates the definers from the semantic maps presented during each segment to class instruction.

Next, this section presents the reading teacher educator's semantic map of reading instruction and the results of his Proposition Inventory. Brief descriptions of educational psychology and classroom management class instruction complete the section.

Reading Methods Instruction Overview

The reading methods course focused on establishing a foundation for building an instructional reading program particularly as it related to the teaching of attitudes, concepts, and strategies associated with elementary grade reading. Course instruction occurred at the field site. This location facilitated the frequent use

of public school children in demonstration lessons to correlate with the teacher candidates' instruction.

Instruction focused on the concept that some teachers produce more reading growth in their students than other teachers. The intent of instruction for this course was to maximize the instructional effectiveness. The effective instructional conditions include:

(1) The more effective teacher thinks in terms of outcomes of reading and assigns tasks that center around the major outcomes of reading.

(2) The more effective teacher views reading broadly. It is not a skill or a series of skills, it is not a subject isolated from other subjects, instead it is a part of language and reading instruction that must reflect this language and communicative function.

(3) The more effective teacher emphasizes cognition, awareness, and mental processing--not memory or rote. It is not, "Are you correct" but rather "How do you know that you are correct?"

(4) The more effective teacher assumes that the basal text cannot provide all of the instruction for all of the students. Instead the basal text is viewed as an instructional tool to be modified and adjusted to the needs of the pupil.

(5) The more effective teacher knows that the basal text teachers' guide seldom provides explanation. If a student is to understand how to do a task, the teacher must explain. Consequently, the teacher must do task analyses of reading assignments in order explicitly to explain how to accomplish the assignment.

(6) The more effective teacher is not looking for the answer to reading instruction. Reading instruction is complex and the classroom is complex. Reading instruction is a developing phenomenon and the answer to reading is an elusive concept.

(7) The more effective teacher realizes that there is no perfect way to teach reading. Continual thinking, changing, modifying, and innovating must take place.

Consequently, effective teachers are in control. They are professionals who make their own decisions.

Reading Methods Instruction -- Segment One

The first eight weeks of instruction emphasized word identification. Course objectives included:

(1) The teacher candidate will demonstrate an understanding of the difference between teaching like a technician and teaching like a professional.

(2) The teacher candidate will demonstrate an understanding of why we teach reading.

(3) The teacher candidate will demonstrate an understanding of what we teach, when we teach, as well as an

understanding of the interrelationships in what is taught.

(4) The teacher candidate will demonstrate an understanding of the developmental stages of reading growth.

(5) The teacher candidate will demonstrate an ability to determine a student's state of reading growth and his or her needs as a teacher, as well as an explanation for the student's rate of growth as a reader.

(6) The teacher candidate will demonstrate an ability to plan and to conduct indirect instruction designed to create the positive reading attitude and to build a concept of reading.

(7) The teacher candidate will demonstrate an ability to plan and conduct direct instruction designed to create strategies for sight word recognition, use of context, use of structural analysis and the use of phonics in identifying words unknown in print.

(8) The teacher candidate will demonstrate the ability to be analytical in thinking about problems of reading.

(9) The teacher candidate will demonstrate the ability to be an independent decision-maker who bases decisions on data collected and defends the decisions by reference to professional knowledge about reading and/or about instruction.

The first three class sessions concentrated on introducing the reading class and giving the teacher

candidates initial preparation to meet with their tutoring students at the field site. Introductory reading instruction stressed three concepts included in a schema structure for reading instruction: (1) the difference between a teacher being a professional decision-maker and a technician, (2) the concept that reading is holistic, and (3) the idea that the reader uses background (prior knowledge) to construct inference and meaning.

The introductory reading instruction also focused on three major outcomes of reading: (1) affective response, (2) comprehension (concepts), and (3) strategic sense-making. Students were taught that these three may be developed through positive feelings and appreciations of reading, through comprehending (concepts) reading and the words in text, and strategies of word identification, comprehension, fluency, and study skills. The reading teacher educator emphasized that the ultimate outcome of reading is the conscious construction of the author's printed message in real reading--functional and recreational.

These initial sessions also included information about the diagnostic assessment collection procedures the teacher candidates would be doing with their tutees. The candidates learned that information was to be collected for diagnostic purposes regarding the students' vital signs of reading. These included the areas of the three outcomes of reading--attitudes, concepts, and

strategies.

The fourth week of instruction (two class periods) emphasized first, widening the base of knowledge for reading instruction which included explanation and discussion about the developmental stages of reading growth: (1) readiness, (2) initial mastery, (3) expanded fundamentals, (4) application, and (5) power. A seond major emphasis was the development of a diagnostic kit for the teacher candidates to use with their tutoring students. This kit included materials such as, appropriate flashcards for sight word identification, graded paragraphs for oral fluency, and graded paragraphs for comprehension. Students learned how to make the items and how to use them with young students. The reading teacher educator felt that the teacher candidates had a difficult time relating their reading assignments to the class presentations. He felt that they did not realize that the assigned reading material was the source of class instruction.

The fifth week of instruction involved the reading teacher educator's presentation of diagnosing a student during a demonstration lesson. Through the use of diagnostic tools, the teacher educator generated from the young student information regarding the three outcomes of reading. After the teacher candidates observed the demonstration lesson, class instruction focused on information needed to write a diagnostic report. The teacher candidates also viewed a video tape of the reading

teacher educator teaching a strategy lesson for word analysis. In reading instruction a strategy refers to mental strategies. Students need to be taught to do specific mental processing through a series of steps to reach a certain goal. The student uses strategies to think through a task such as figuring out an unknown word. Thus, when a student is taught to do this mental processing, a strategy is being taught.

During the sixth week of instruction more discussion centered around the teacher candidates' tutoring sessions. Each lesson was to be cohesive, and the teacher educator suggested that the rule of thirds be established. The lesson was to be planned in three ten-minute segments--sight word instruction, data collection about the tutee, and USSR (uninterrupted sustained silent reading). Each lesson was to include direct and indirect instruction even though reading methods instruction only would be stressing direct instruction.

The sixth week focused on word identification from contextual meaning. During the demonstration lesson the reading teacher educator told a group of third graders that the "secret" (strategy) was to find out the word by seeing how that word is used with the other words around it. A reader needs to: (1) realize that he/she does not know the word, (2) skip it, (3) look at the rest of the words, (4) come back to it, and (5) figure out what it is by using his/her knowledge about the other words

already known in the sentence. The professor illustrated the steps to teach a strategy: (1) modeling it, (2) using highlighting (underlining), (3) diminishing of highlighting, (4) incorporating practice, and (5) applying the strategy of the lesson in "real" reading.

Students also acquired information about the preparation and writing of a lesson plan, including a preactive phase, an interactive phase and the general physical format of a plan. Each lesson was to have: (1) a preactive phase including an assessment, enabling objectives, and terminal objectives, (2) an instructional (interactive) phase which included introduction of the lesson, the content, the purpose, and explanation of how the material fits into reading, (3) a presentation of the "secret" for the strategy, (4) the modeling of the strategy, (5) a practice activity, (6) an application to real reading, and (7) a summary of the presentation. The professor emphasized that in teaching contextual meaning, prior experiental background knowledge of the students has to be emphasized.

The reading teacher educator felt that this sixth week was pivotal. He believed that the teacher candidates had enough knowledge about reading instruction and that they were not operating out of ignorance any longer. They should know enough to begin long-term planning for their tutoring students. He felt that most candidates possessed a comprehensive sense of information about

reading instruction.

The seventh and eighth weeks of reading instruction continued to focus upon word identification. The professor introduced contextual meaning through direct experience, synonym, sentence structure, summary, and mood clues strategies. The students needed further mediation of instruction in lesson planning and in sight word identification. Reteaching occurred in both areas. During this time word identification through phonics was introduced as part of the curriculum. Instruction greatly stressed that phonics for identifying unknown words is to be the last resort. Phonics is a very slow process for word identification. In the place of this slow process, a system of reading beyond phonics needs to be stressed. The teacher candidates also were given extra help in planning word identification lessons for their tutees. The subjects constructed their second semantic map at this time.

In summary, the first segment of reading methods instruction (between first and second semantic map) emphasized that reading is sense-making and meaning-getting. The teacher candidates were exposed to a body of knowledge about reading instruction from a research base. Emphasis was made on diagnosing, lesson planning, and word identification through sight words, contextual meaning, word analysis, and phonics. Subjects learned three major outcomes of reading: (1) the affect for the student,

(2) concepts (comprehension), and (3) strategic sense-making. The ultimate outcome is for the child to apply reading in the real world.

Definers -- Reading Instruction. The researcher read her notes from the first eight weeks of reading instruction. Each time one of the definers was in her notes she listed it. For instance, the definer "activity" was found in her notes three times. A total of 29 definers were discussed enough in reading methods instruction to be included in the researcher's notes. The 15 other definers used from the semantic map were not used. In some cases there was an implicit reference to a definer. For instance, the definer "vocabulary" was implicitly discussed every time the definers "sight words," "phonics," and "word analysis" were used.

Reading Methods Instruction -- Segment Two

During the next six weeks the major instructional focus was on the introduction of the basal text for instructional purposes with an emphasis on comprehension. Objectives during this six-week period included:

(1) The teacher candidate will demonstrate the ability to organize and modify content of a basal reader in planning a unit of instruction for a reading group.

(2) The teacher candidate will demonstrate the ability to plan and implement a longitudinal program of instruction based on assessed needs which results in

documented improvements in specified reading outcome for her tutee.

(3) The teacher candidate will demonstrate reading instructional decisions which are justified by reference to the nature of reading comprehension, how it works, and how students can be helped to become metacognitively in control of their own text processing.

The basal text was introduced as not being infallible. The basal text is a series of readers with different readability levels. Usually there are three materials for the teacher to deal with -- the student's book, the teacher's guide book, and a student's workbook. The stories and skills are not ordered and there is no cohesive progression involved. Thus, a teacher must reorganize a basal and establish a logical progression of instruction. A basal text advises the teacher to have the students read the selection, then to teach the skill, and then to enrich or reteach. This arrangement needs to be changed. The teacher instructs first, the students practice what has been taught, and then the students apply what has been taught by reading the selection.

The reading teacher educator also emphasized that comprehension cannot be taught just by asking questions from a story. Caution needs to be used so that practice tasks do not become routine busy-work assignments, emphasizing answer-getting. At this time the teacher candidates began planning a basal text unit of instruction

for a reading group. They were asked to reorder their basal text to show more cohesion in instruction and to be aware of the curriculum outcomes that should be taught. Since a basal text stresses the teaching of skills, attitudinal aspects and concepts needed to be added to make the unit complete. Teacher candidates were encouraged to generate creative activities in order to add these additional dimensions to their lesson plans.

The next two weeks of instruction emphasized the planning of a DRL (directed reading lesson). Teacher candidates planned the lessons to help the students understand how the system of reading works. Each DRL included: (1) an introduction relating to the desired outcome, (2) new vocabulary, (3) reading of the selection, (4) a guided discussion, and (5) closure. After teaching each lesson the teacher candidate was asked to reflect upon it. What data emerged from this lesson that could be used to plan the next one?

The teacher candidates were told that declarative knowledge is the knowledge about the basal text story through the aspects of word meaning, prior knowledge, author's purpose, text structure, explicit and implicit meaning in text. New vocabulary should be chosen from the important words in the selection. Barriers for comprehending the story could be from vocabulary, background experience, author-reader purpose differences, and text structure. These barriers need to be neutralized. Every

question asked should be tied to the analysis of the structure of the story. What exactly are the crucial events? Questions should represent a line of important questioning and not be isolated unimportant details from the story. Students need to understand that stories have structure and that they can predict outcomes of a story. Usually the lower grades emphasize oral reading and the upper grades stress silent reading. The teacher candidates used the directed reading lesson (DRL) lesson plan format for their reading group instruction.

During the next three class sessions teacher candidates made presentations of assigned journal articles. These articles included such subjects as: metacognition, metacomprehension, and developmental reading stages. The object of this activity was to enable the teacher candidate to synthesize and analyze various author's viewpoints and to incorporate this knowledge into what they already knew about comprehension. The ultimate expectation was that this activity would assist the teacher candidates to build their own schema of reading and enable them to make better instructional decisions. The reading teacher educator recommended that to further build their schema they needed to devote time just to think and to accommodate the new information with that which they already knew.

Thus, during the second segment of instruction (between construction of the subjects' second and third

semantic maps), reading methods class emphasized comprehension which entailed obtaining declarative knowledge from printed text. The barriers for comprehension can be vocabulary, student background experience, a mismatch between author-reader purpose, and text structure. The teacher candidates planned a unit for a reading group from the basal text.

Definers -- Reading Instruction. Definers like "basal text," "phonics," and "word analysis" were used during this segment of instruction. No additional definers were initially introduced in this segment. "Readability" was mentioned once in the framework of a basal reader's readability. It was not discussed any further or given any definition as to exactly the meaning of readability. Definers like "vocabulary," "learning," and "organization" were used in assigned material readings but were not specifically discussed in class.

Reading Methods Instruction -- Segment Three

During the last six weeks of instruction the major focus was on explicit and implicit comprehension strategies. Explicit comprehension strategies include: typographic clues, root word and affixes clues, contextual clues, and function word clues like cause-effect, compare, and contrast. Implicit clues comprise the reader classifying like and unlike things together, the reader using the gist of the text to draw inferences regarding the author's implied meaning, the author making inferences

about relationships in the text when no key words are available, constructing meaning about conclusions from textual messages by referring to the reader's past experiences, and by making judgments about the reader's messages from past experiences and values.

The teacher candidates used adult reading material to form their own implicit and explicit strategies before they transferred them to strategies to teach to their reading groups. Near the end of the term another series of journal article presentations were part of the class sessions. The article topics included: schema theory, interactive reading, and basal text questioning. During the last session of the term the teacher candidates started planning a content area unit in science.

Definers -- Reading Instruction. Near the end of the third segment of instruction the definer "content area text" was introduced and discussed as it pertained to planning a science unit for the next term.

Summary of Reading Methods Instruction

Briefly, during the first segment (weeks 1 to 8) of reading methods instruction, the teacher candidates were introduced to a body of knowledge showing that reading is a strategic sense-making activity. Three outcomes of reading: attitudes, concepts, and strategies were emphasized. During this time the teacher candidates tutored a student and emphasized word identification strategies

including: sight words, contextual meaning, word analysis, and phonics.

During the second segment of instruction (weeks 8 to 14) the major instructional emphasis focused upon comprehension strategies and basal text unit planning. Instruction emphasized that a basal text is to be an instructional tool. The teacher candidates planned lessons from a directed reading lesson format.

During the third segment of instruction (weeks 14 to 20) comprehension continued as the focus. During this segment implicit and explicit strategies were emphasized. At the end of the segment, a science content unit plan was introduced.

During the first segment of instruction 29 of the definers used in the semantic maps were discussed in class. During the second segment of instruction the definer "readability" could be added. During the third segment "content area text" was included. Thus, in the twenty weeks of instruction 31 out of the 44 definers used in the semantic map were discussed in reading methods instruction. Some of the definers were implicit in discussion, i.e., "vocabulary," and others were only discussed in assigned reading material, i.e., "learning."

Reading Teacher Educator's Semantic Map

The reading teacher educator constructed his semantic map (see Figure 5) of reading instruction early in the twenty weeks of reading instruction. He began by

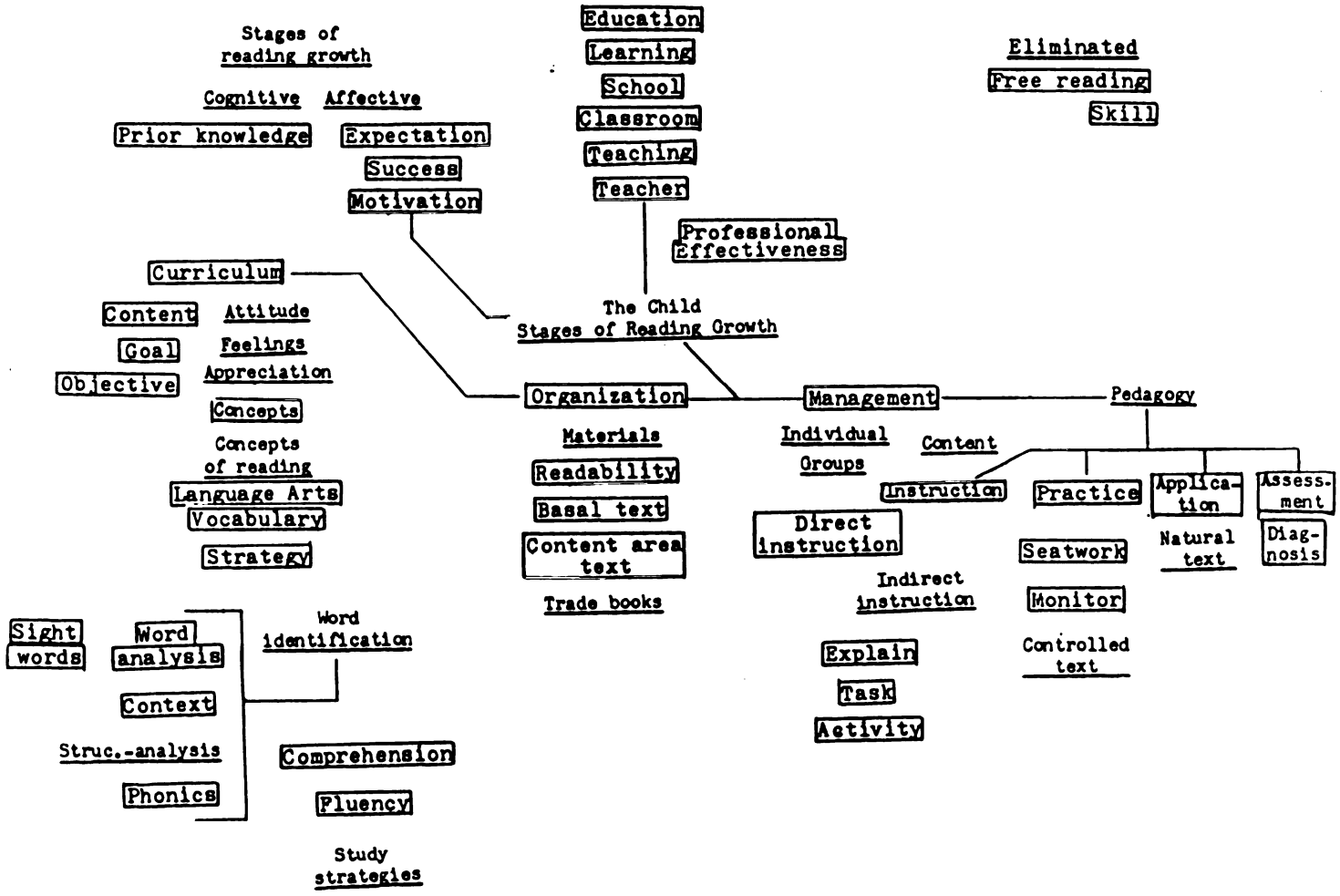


Figure 5 Reading Teacher Educator-Semantic Map

putting as he called it, "large things at the top." These included: "education," "learning," "school," "classroom," "teaching," and "teacher." He then divided most of the definers into three categories that he named "curriculum," "child," and "instruction."

Then focusing on each category individually, he more fully developed each individual category. The child section was constructed between the general education definers on the rest of the map. He developed this category from the stages of reading growth divided into cognitive and affective. The curriculum section focused on the outcomes of reading and the strategies of reading. In this curriculum section he added definers -- "attitude," "feelings," "appreciation," and "study strategies." He then divided the instruction category into "organization," "management," and added the definer "pedagogy." Under organization was "content area text," "basal text," and "readability." He also added the definers "materials" and "trade books." From "management" was "direct" and "indirect instruction," "explain," "task," and "activity." From the pedagogy section was "practice," "application," "assessment," and "diagnosis."

The reading teacher educator eliminated two definers -- "free reading" and "skill." Instead of "free reading" he had added the definers "trade books" and "controlled text." In discussing the elimination of the definer "skill" he said, "Last year I would have put skill

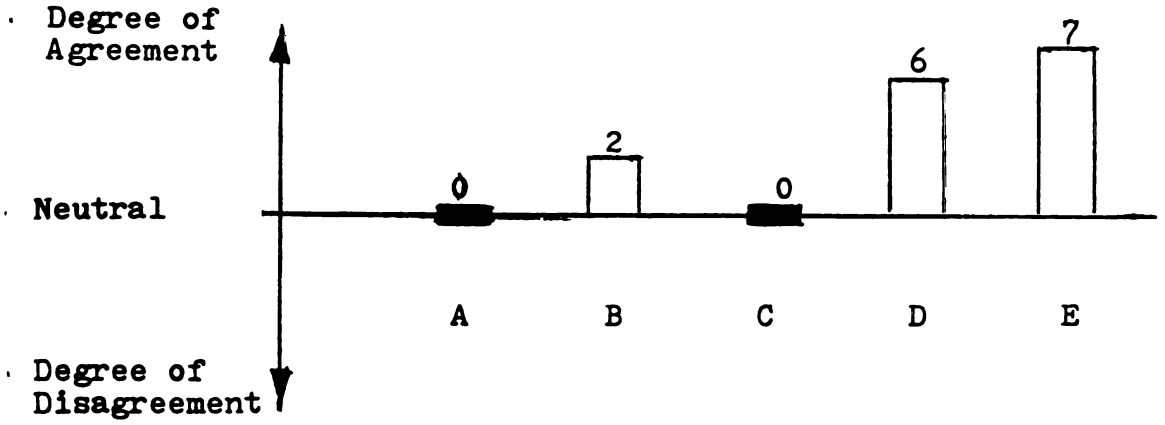
in....Now I am using strategies because skill implies something else. Strategy implies thoughtful mental processing as I can see." He stated that last year he would have used the term skill instead of strategy. He felt that in the future, "It (his semantic map) will probably be different next time."

The reading teacher educator's map suggests that the child is the most important element in his conceptualization of reading instruction. Although in his discussion he said he had three large categories of "child," curriculum," and "instruction," he placed the child at a central location on his map. He developed the categories of "curriculum" and "instruction" from the child. The remainder of the content area of reading instruction was then generated. Thus, he conceptualized reading instruction like a sphere with three layers. The core is the child, the intermediate layer included "instruction" and "curriculum" and the outside peripheral layer contained content specifically related to reading instruction.

Proposition Inventory

The reading teacher educator completed the Proposition Inventory (see Table 3). His net score in the basal text area was "0" or neutral. He rated three statements as neutral, three he agreed or strongly agreed with, and three he disagreed with. He strongly agreed with, "I believe that an important criteria for grouping pupils is the level basal textbook each is able to read." His

Table 3 Reading Teacher Educator Proposition Inventory



Content Centered	Student Centered
A - Basal Text	C - Interest
B - Linear Skills (Content)	D - Natural Language
	E - Integrated Whole

strongly disagreed with statement was, "I believe that the teacher's role in reading is to assign pupils to appropriate basal materials and direct them as they complete the material."

The linear skills area net score was +2. He rated three statements as neutral, four statements that he agreed or strongly agreed with, and two statements he disagreed or strongly disagreed with. He strongly agreed with the statement, "I believe that teachers should directly teach the basic skills of reading to those pupils who need them." He strongly disagreed with the statement, "I believe that primary grade reading should emphasize decoding skills more than comprehension."

In the nine statements regarding interest his score was "0" or neutral. He rated one statement as neutral, he agreed with four, and disagreed with three. He strongly agreed with the statement, "I believe that an important indicator of reading growth is how often a pupil voluntarily uses reading in his daily life." He strongly disagreed with, "I believe that reading groups should be based on the pupil's interests."

He showed strong belief in the natural language area with a score of +6. He agreed or strongly agreed with eight statements such as, "I believe that reading instruction should focus heavily on comprehension, even at the beginning stages of reading."

His highest net score (+7) was in the integrated

whole area. He agreed or strongly agreed with seven statements such as, "I believe that a significant amount of the instructional time in reading should be spent on purposeful real-life projects and activities which call for the use of reading." In this area he strongly disagreed with one statement. It was, "I believe that reading groups should be formed as the need for them arises and should be disbanded when the need has been met."

In summary, two areas, basal text and interest, received a net neutral rating. These two areas had half to one-third "agree with" ratings and half to one-third "disagree with" statements. Thus, most statements within each area did not receive a neutral rating. Two of the three student-centered areas -- language and integrated whole -- received high "agree with" ratings. The content-centered areas received neutral to mildly agreeable ratings. His high ratings in the two student-centered areas and his near neutral and neutral ratings in the content-centered areas substantiates his student-centered conceptualization of reading instruction displayed on his map. The area of interest was the only area that did not appear to parallel his stress of positive student attitude and feelings about reading shown on his map. Some interest statements discussed topics such as, grouping for reading by students' interests rather than ability and the use of a student chosen basal text. This was not the manner in which he viewed the term interest.

Educational Psychology Instruction

During the first ten weeks of reading methods instruction the subjects along with the other teaching candidates in their group took an educational psychology class. As previously stated, both teacher educators had met to coordinate class assignments and reduce terminology conflicts. The educational psychology course was designed to help teacher candidates develop understanding of principles and educational psychology dealing with learners and learning in classrooms, and to become aware of basic teacher decisions that must be made when planning and implementing instruction.

The three main course objectives were:

(1) Use the principles of learning and development to state evaluations and improvements of existing materials or instructional activity.

(2) Use the principles to design parts of or entire instructional activity.

(3) Discriminate between examples and non-examples of basic concepts and between correct and incorrect applications of principles.

Teacher candidates were instructed in concepts and principles involved in making basic decisions like what will be learned, how learning will be assessed, and who are the learners. Learning focused on principles to make plans for classroom activities such as, how to motivate students, how to present information and how to provide

practice and feedback. Among these principles were information processing theory and ideas of transfer and modeling, as well as knowledge related to making decisions about objectives, content, and assessment.

Ten definers were explicitly taught during instruction: "goal," "task," "organization," "expectation," "monitor," "objective," "instruct," "concept," "motivation," and "assess." Seven of these were also included in reading. The three new ones were added: "organization," "expectation," and "monitor."

Classroom Organization and Management Class

During the second ten weeks the subjects took the classroom organization and management class. The focus of the class was on teacher decisions in planning for the physical and psychological aspects of classrooms that contribute to productive learning and minimize disruptive and non-productive behavior.

The major objectives for this course were as follows:

(1) The teacher candidate will demonstrate knowledge of teacher behaviors, teacher attitudes, and environmental factors which contribute to creating classroom atmospheres in which disruptive problems are less likely to occur and academic achievement is likely to occur.

(2) The teacher candidate will demonstrate knowledge of options available to teachers responding to disruptive behavior and which results in pupils assuming

responsibility for their own behavior and academic achievement.

(3) Teacher candidates will demonstrate ability to select and articulate rationales for differences and similarities for appropriate management and organization strategies.

Instruction emphasized management techniques of creating, maintaining, and restoring. Creating techniques are used to get the classroom functioning well. When the classroom is functioning well there is no visible indication of disorder or potential disorder. When these techniques are in use the teacher is anticipating on the basis of what she knows about children, learning, and school situations that might be needed for control purposes. Maintaining techniques are also used to keep a classroom functioning well, but visible clues are present in the situation which suggest that trouble will soon occur unless the teacher acts. Thus, these techniques are meant to extinguish the signs of potential disorder before they occur. When these maintaining techniques are in use, the teacher relies on both her professional knowledge and her observation of the current classroom situation. Restoring techniques are for restoring the order once it has been lost. The teacher candidates were told that no matter how competent the teacher is, restoring techniques may be needed.

"Organization," "management," "classroom," and

"teacher" were the explicit definers used in classroom management instruction. Implicit ones included: "task," "activity," "monitor," and "teaching." All of these definers except "management" and "classroom" had been included in instruction.

Summary of Teacher Education Instruction

During the twenty weeks of this study the subjects along with the other teacher candidates in their group were exposed to reading methods, educational psychology, and classroom organization and management classes. The effective teacher was seen as a professional decision-maker in all instruction.

In reading methods instruction emphasis was on the three major outcomes of reading: affect, concepts, and strategies. During the first weeks word identification and diagnosis were stressed. During the last weeks comprehension was the major stress. The subjects tutored a single student during the beginning weeks and taught a reading group using a basal text during the second half. In reading instruction methods 29 definers used in the mapping were introduced during the first eight weeks of instruction. Two were added to the list later. Other general terms of education were implicit in instruction and discussed in the assigned readings.

The educational psychology class focused on understanding the principles of educational psychology as they relate to learners and learning in the classroom. From

this emphasis much time was spent on lesson planning and implementation. The definers introduced during instruction included: "task," "organization," "objective," "instruct," "concept," and "assess."

The classroom organization and management class stressed planning for the physical and psychological environment of the classroom to enhance learning through the use of creating, maintaining, and restoring techniques. The major definers used in class were: "organization," "management," "classroom," and "teaching."

In essence, all but eight definers specifically were used in one of the three instructional classes. Some terms used in instruction denoted similar concepts. "Free reading" was not usually called free reading in reading methods, instead it was usually referred to as USSR. "Seat work" was not specifically referred to as "seat work" but was referred to as ditto pages or workbook pages. Definers like "language arts" were not specifically used during instruction.

Subject Summaries

Introduction

Summaries of the individual subjects' findings comprise the third section of this chapter. (A complete report for each subject is in the Appendices.) Each summary includes findings from the data gathered in the pre-instructional, instructional, and post instructional phases of this study. The primary data source was the semantic

maps of reading instruction. The secondary data sources included: (1) the Proposition Inventory, (2) the debriefing sessions, and (3) the reading definitions. The findings contain: (1) the description and analysis of the data and (2) the subjective interpretation of the data by the researcher.

The objective of the analyses of the data sources was to determine the subjects' preconceptions and the subsequent conceptual changes regarding reading instruction. The researcher assumed that methods instruction would assist in the subjects' changes. Thus, each source also was viewed to find evidence of the subjects' incorporation of methods instruction.

The application of three criteria to the semantic maps determined the subjects' preconceptions and their subsequent change. The following criteria were used: (1) geometric shape of maps -- grouped, hierarchical, connected, branched, interrelated, (2) change in the shape of a map, and (3) manner in which the subject discussed her map -- definers not verbalized, listed without explanation, discussed in context. Three different criteria determined the subjects' incorporation of instruction: (1) definers added to the maps after they were presented in class, (2) comparison with information from discussion and class instruction, and (3) similarity with reading teacher educator's map.

The scores from the Proposition Inventory were

analyzed with two criteria to assist in establishing the subjects' preconceptualization and change. Preconceptualization was assessed by the net score in each of the five belief areas. Change was assessed by the change in net scores between the September and March inventories. To assess the incorporation of instruction the subjects' inventories were compared with the reading teacher educator's inventory. Specific dialogue between the researcher and the subject during the debriefing sessions produced evidence of change and incorporation of instruction. The reading definitions were assessed for incorporation of instruction by the number of individual concepts relating to methods instruction, and change was assessed by comparing major themes stated in the two sets of definitions.

The objective in the interpretation of the findings was to gain additional insight into the subjects' conceptualization of reading instruction. Three areas of research were used for this purpose: (1) the semantic structure of a map (Johnson and Pearson, 1978), (2) the conceptual change of a learner between the learner and the environment (Floden and Feiman, 1981), and (3) the expert-novice body of knowledge (DeGroot, 1965; Cazden, 1976; Larkin, 1981). First, two relationships were interpreted--class and properties--from the semantic maps. Class refers to the categories of reading instruction such as "education" and "school." Property refers to the qualities of reading instruction such as "sight words" and

"phonics." Second, the relationship and interaction between the learner (subject) and the environment (students) was interpreted. The interpretation of this factor involved all data sources. Third, each subject's conceptualization was estimated on a novice (low-knowledge) to expert (high-knowledge) continuum as it relates to change and evidence of incorporation of instruction.

Thus, each summary includes pre-instructional, instructional, and post instructional findings of the subjects' conceptualization of reading instruction from the data description and analysis determined by specific criteria and subjective interpretation according to three areas of pertinent research.

Summary of Subject A

In the pre-instructional data, Subject A exhibited knowledge in the classes of education in general and two groups of reading instructional properties. Her initial map exhibited a cohesively connected and branched hierarchy. She viewed the teacher as interacting with this instructional framework rather than with the environment (student). But her secondary data indicated stronger belief in the child-centered areas of reading instruction rather than in content. On a novice-expert (low to high knowledge) continuum, she appeared to possess a moderately low-knowledge conceptualization of reading instruction, as evidenced by the ability to show a relationship between general education classes and large sets of

reading properties. Her discussion of the map was void of elaboration or explanation. Thus, her preconceptualization was a systematic organization focused on major objectives from which the reading instructional process develops.

Early in the instructional phase Subject A's map showed a rigid dichotomy between definers from educational psychology and reading methods instruction. Her secondary data indicated conceptual confusion regarding instruction. She did not consistently relate instruction to her environment (student). At this time her conceptualization appeared to be confused and without focus. Later in the instructional phase, her map became connected and branched with relationships shown between the general education classes and reading properties. This map emphasized the direct instruction properties of the reading instructional process. She saw this framework to be superimposed, without interaction, upon the environment (student). Secondary data indicated that she later understood concepts that she had earlier misunderstood. Subject A's conceptualization appeared to have developed to an organized focus on direct instruction in reading instruction. Evidence of this change was obvious from the structure of her map and emphasis of direct instruction strategies in her discussion.

Subject A's post instructional map became hierarchical in shape again with no integration between general

education classes and reading instruction properties. Branching occurred only in the "strategy" group of reading properties. Her secondary data indicated conceptual confusion about instruction and a stronger belief in teacher-student interaction than reflected in her maps. She appeared to have changed from moderate-knowledge to a low-knowledge conceptualization of reading. Thus, Subject A's terminal conception of reading instruction was a hierarchical structure and an organized step-by-step approach to the reading instructional process with a focus on the strategy properties.

In summary, Subject A's initial semantic map exhibited a branched and connected hierarchy showing large categories of reading instructional properties based on teacher-made objectives. The second map became a rigid dichotomy between educational psychology and reading methods instruction with confusion exhibited. The third map was a branched and connected hierarchy emphasizing direct instruction of the strategy properties in reading instruction. The terminal map was a rigid hierarchy focusing only on a strategy group of properties. Her secondary data source contradicted the primary data source regarding the teacher's role with the environment and also revealed conceptional confusion of methods instruction.

Subject A's conceptual development of reading instruction did not progress steadily. Although she continued to have an organized knowledge of the general

education classes, the relationship of this knowledge to the properties and sets of properties of reading instruction was erratic. She appeared to abandon her initial conceptualization and to begin a new one. Although her conceptualization initially appeared to develop, it regressed at the termination of instruction. The environment (student) did not have an actual role in her conceptualization. She imposed her knowledge onto the environment. On the novice-expert (low to high knowledge) continuum, she changed from moderately low-knowledge, to low-knowledge, to moderate-knowledge, and then to low-knowledge.

Thus, Subject A's conceptualization and subsequent change was puzzling. Conceptual development was not stable or easily explained. Evidence indicated that her greatest progress toward change took place at the second interim point during instruction rather than at termination. A real question remains as to her development and her final conceptualization of reading instruction during this study.

Summary of Subject B

Subject B's pre-instructional map exhibited knowledge of organized classes of education in general and unrelated categorized groups of reading instructional properties emphasizing a close interactive role between teacher and student. The secondary data emphasized both content-centered and student-centered beliefs about reading

instruction. Subject B appeared to possess a low knowledge of reading instruction initially.

Early in the instructional phase Subject B's map, the primary data source, became horizontally connected and branched showing a strong emphasis upon professionalism of the teacher, and the interactive process between the student and teacher in reading instruction. Her secondary sources indicated conceptual understanding of instruction. Later in the phase, Subject B's map became more connected and cohesive with more stress on instruction of reading and less emphasis upon teacher-student interaction. At this time, her conceptualization of reading instruction was assessed to be organized and structured, emphasizing direct instruction and the continuative or additive quality of instruction. She appeared to possess a moderate knowledge of reading instruction.

In the post instructional phase Subject B's map became complexly integrated and interrelated. All data sources indicated a strong belief in student-centered instruction. Thus, Subject B's terminal conceptualization was a loosely organized, highly complex integration. Her map displayed interrelated knowledge of reading instruction and emphasized the need for direct instruction, the continuative quality of the reading instructional process, and teacher-student interaction. All secondary data sources corroborated conceptual change and understanding consistent with instruction.

In summary, Subject B's semantic maps, the primary data source, changed from being hierarchical and grouped stressing the distinct teacher and student roles in reading instruction, to being horizontally connected and branched emphasizing the interactive role of the teacher and student, to being more cohesive stressing the continuative and direct instruction aspects of reading. Her last map showed complex interrelationships.

Thus, Subject B's conceptual development of reading instruction changed significantly and progressed through different levels of conceptualization. Although she initially had an organized and related knowledge of the general education classes, the organization became more integrated. Her knowledge of reading instructional properties showed significant development. The initial five sets of unrelated reading properties became a complex and integrated conceptualization stressing direct instruction and the continuative quality of instruction. Some of the structured organization declined as a result of the complexity. She increasingly showed a strong belief in the teacher's interaction with the environment (student). On a novice-expert continuum (low to high knowledge), she initially had low-knowledge, then displayed moderate-knowledge, and terminated with high-knowledge. Subject B's conceptualization and change appeared to be progressively growing and developing.

Summary of Subject C

In the pre-instructional data Subject C's semantic map was hierarchically shaped, but her discussion denoted a more contextual conceptualization. She knew several separate bodies of knowledge about reading instruction -- grouping, goals, and management stressing interaction with students. A secondary data source corroborated her strong belief in student-centered reading instruction. Thus, Subject C's preconceptualization of reading instruction appeared to be unstructured with a low moderate-knowledge of several reading instruction components emphasizing teacher-student interaction.

Early in the instructional phase all data sources indicated conceptual understanding of instruction. Her map became horizontally branched and connected with her conceptualization being a well-organized framework of general education classes and groups of reading instructional properties stressing instruction in reading strategies and de-emphasizing student interaction. Later in the instructional phase, Subject C concentrated on the comprehension aspect of reading instruction on her map with the remainder of her map becoming loosely structured and organized. The map and a secondary data source offered evidence that she was becoming self-analytical and able to problem solve about reading instruction.

Her post instructional map was complexly integrated. Secondary data indicated conceptualization of instruction.

Thus, her high-knowledge conceptualization was highly interrelated and integrated between the general education classes and reading instructional properties stressing teacher and student interacting with a multi-instructional approach to reading instruction.

In summary, Subject C's conceptual development in reading instruction changed significantly and increased in conceptualization. Her initial organized knowledge of general education classes became more integrated with the reading instructional properties. Her knowledge of and structure in the reading instructional properties increased. At the point where her knowledge structure became integrated and complex, the organization declined. Her interaction with the environment (student) was continuous and active. On a novice-expert (low to high knowledge) continuum, she initially had low moderate-knowledge, then developed moderate-knowledge, and terminated with high-knowledge. Subject C's conceptualization of reading instruction appeared to be growing and developing. Thus, Subject C's terminal conceptualization of reading instruction was loosely organized and structured, but was a highly knowledgeable, complex, and integrated web which was attempting to manage the interaction of classes and properties of the instructional process with strong teacher-student interaction.

Summary of Subject D

Pre-instructional data revealed that Subject D had a limited knowledge of the classes of education in general and reading instructional properties. Her initial map was a brief hierarchy branched to one group of reading properties. She also believed in a content-centered rather than student-centered reading instructional process. Thus, Subject D appeared to have a low-knowledge preconceptualization of reading instruction with few general education classes related to a set of reading properties stressing the content-centered approach and continuative aspect of reading instruction. She believed that the teacher's role was to "impose" instruction upon the student.

Early in the instructional phase Subject D's map became a more branched and connected structure, emphasizing the teacher acting as the director of a specific step-by-step approach to learning through the use of a basal text. Conceptual incorporation of reading instruction was not apparent in secondary data, nor was other instructional incorporation indicated in her map. Later in the instructional phase, her map showed evidence of increased relationships but not of additional knowledge. Also at this time she appeared to break free from the conceptual rigidness through thinking about alternative approaches to the reading instructional process (not just the basal text). This change was evidenced by the more branched

and expanded construction of her map. Her continued rigidity in lesson implementations and discussion during debriefing sessions did not substantiate this conceptual change.

In the post instructional phase Subject D's map showed some incorporation of instruction. Her conceptualization was very structured and related to general education class with groups of reading properties -- goals, comprehension, sight words, and seatwork focusing on the instructional process and stressing continuative aspects of instruction. The continuative stress was not evident in her secondary data. Secondary data revealed little change in her belief of content-centered instruction or conceptual incorporation of instruction. Thus, her conceptualization appeared to revert to a very structured and organized knowledge framework stressing a rigid learning instructional process controlled by the teacher. Conceptual integration, relatedness, or personal depth of thought was not evident.

In summary, Subject D's conceptualization of reading instruction began with a sparse and narrow general knowledge. Through a gradual progression her conceptualization enlarged into a more organized and related knowledge of general education classes and groups of reading instructional properties. At the termination of instruction, her conceptualization was very structured and did not appear to include any personal interpretation.

She appeared to view the teacher's interaction with the student as rigid and authoritarian. She seemed to see herself on one side and the student on the other. On the novice-expert (low to high knowledge) continuum, she began with very low-knowledge, then progressed to moderately-low, and terminated with a low moderate-knowledge. (Moderately-low is in the median range of low and low-moderate.) Subject D's conceptualization and change appeared to be very gradual and minimal with a minimum of personal contribution, as evidenced by the rigid construction of her last map and her lack of profundity during debriefing sessions.

Summary

This section contains individual summarized findings of the subjects. Each summary includes pre-instructional, instructional and post instructional data analyses and interpretations from specified criteria and research.

FINDINGS

Introduction

The findings from this study are presented in this section. Qualitative analysis techniques were used to formulate the findings.

Finding One

TEACHER CANDIDATES HAVE PRECONCEPTIONS WHEN ENTERING READING METHODS INSTRUCTION.

All the subjects had a preconceptual framework of reading instruction. Their pre-instructional semantic

maps revealed a dichotomy between definers associated with educational in general and those associated with reading instruction in particular. The subjects arranged the general education definers in a hierarchical system and arranged the reading instruction definers in groups or categories. For example, the subjects placed general education definers such as, "education" and "school" in a hierarchical ordering. Reading instruction definers such as, "sight words" and "phonics" appeared in groups or categories. Thus, the data revealed that these teacher candidates conceive of general education in a hierarchical system and conceive of reading instruction in various categorized groups when they enter reading methods instruction. Each subject's initial map showed a different number of relationships between the classes of general education and reading instruction.

Finding Two

TEACHER CANDIDATES' CONCEPTUAL FRAMEWORKS OF READING INSTRUCTION DID CHANGE. THE CHANGE OCCURRED IN STAGES DURING INSTRUCTION.

The framework of the subjects' semantic maps changed in stages during instruction. Initially, each pre-instructional map structure showed a combination of hierarchical and grouped structures. Subsequent change occurred in stages consistent with Norman's (1978) three stages of knowledge acquisition. Each stage is seen gradually to emerge into another, rather than at specific beginning and

ending points. The subjects' first interim maps during instruction became an extended branched structure. At this first stage, the subjects appeared to receive instruction and to process it by "spreading it out" in their thinking. This stage corresponds to Norman's stage of accretion. Accretion is the acquisition of new knowledge upon which a data base develops into a new knowledge framework. Thus, the first stage of these teacher candidates' change in conceptual framework is accretion. The new information presented in instruction is added to the subjects' entry knowledge.

The subjects' second interim maps during instruction indicated a more cohesively connected framework. Most new reading instruction knowledge had been presented in class by this time. The definers on the maps now were "pulled together" instead of being "spread out" as they were previously. There were connections and relationships between definers. This compares to Norman's second stage of restructuring. Restructuring is discovering new insights into a particular conceptual structure. In essence, it is the reconceptualizing of knowledge. For the subjects, this stage was evidenced by the "settling in" of the previously presented knowledge. Restructuring occurred when a subject responded, "Oh, now I see!" Accretion and restructuring did not occur at the same time for all subjects. For example, Subject B was in the accretion stage at her first interim mapping and restructuring by

her second interim mapping. Subject D appeared to be in the accretion stage during both the first and second interim maps, and in the restructuring stage at the termination of instruction.

Norman's third stage is "tuning" and is characterized by the decrease in the structure of the conceptual framework. In the tuning stage, the previously acquired knowledge is adjusted and some previous conceptual structure is eliminated. Subjects B and C appeared to be in this third stage of tuning by the termination of instruction. The framework in their last map became more loosely constructed. They de-emphasized previous explicit components in reading instruction such as "diagnosis." Subject A and Subject D did not show evidence of being in the tuning stage at the termination of instruction.

Thus, the subjects' conceptual framework of reading instruction changed during methods instruction. The change appeared in definable stages of accretion, restructuring, and tuning. The subjects did not progress through all three stages or at equal rates of development.

Finding Three

TEACHER CANDIDATES' CONCEPTUALIZATION OF AND CHANGE IN READING INSTRUCTION IS AFFECTED BY THEIR VIEW TOWARD THE ROLE OF THE TEACHER AND THE ROLE OF THE STUDENT IN THE INSTRUCTIONAL PROCESS.

According to the cognitive developmental theorists,

conceptual development and growth occurs when the learner actively interacts with the environment. In this study the subjects were viewed as learners and the environment was the subjects' reading students. If a subject did not consider student needs to be more important than the content, conceptualization of reading instruction appeared to be impeded.

For example, Subject D said she would like her students to sit with their hands folded, their mouths quiet, and listen to her. She also referred to her students as "smart alecks" when the students did not correctly respond to her questions. Other data suggested that she valued content-centered instruction more highly than student-centered instruction. Her conceptualization of reading instruction appeared to be a rigid, two-sided procedure with the teacher teaching and the student learning. She did not use knowledge about her students' instructional needs to plan lessons. During mapping sessions, she stated the belief that if the student does not learn, the teacher repeats instruction. During her lesson implementations, she did not demonstrate this avowed concept of reteaching. Her content-centered concern was also evident in her discussions during debriefing sessions and her ratings on the Proposition Inventory. She presented much content in the lessons, but she did not fulfill the instructional needs of her students. She was not an active learner interacting with her students. Her

conceptual change and development in reading instruction were impeded. As she said, "I started the same and ended the same."

In contrast, when a subject regarded herself as an active learner interacting with her students, her conceptualization changed and developed into a complexly interrelated understanding of reading instruction. Subject C spoke in terms of the importance of her students: (1) being "comfortable in the group (reading)," (2) being able to have "them (students) decide on their own goals because if they decide their own goal they are more apt to reach it." and (3) being "motivated first before instruction begins." In contrast, Subject A said that she did not see "any difference of where motivation comes in the lesson." Other secondary evidence corroborated Subject C's low belief in basal text emphasis, and her high regard for the "integrated whole" aspect of the student in instruction. Her terminal map of reading instruction was difficult for her to construct because she "got so much" from her field experiences and that now "these (definers) are so closely related." She said she used to see the classroom with "only a teacher teaching" but now she sees the classroom "with so much more." This suggests that since Subject C was an active learner interacting with her environment, her change and development in the conceptualization of reading instruction were significant.

Similarly, Subject B also exhibited evidence that she was an active learner learning from her environment. When she discussed planning, she talked about "planning for her students" and not planning lessons. She made instructional decisions based upon her students' needs. New instruction was not presented if she assessed that her students needed "a little more time" on a lesson. Her maps and discussions emphasized her belief about the role between teacher and student. Subject B said, "learning together and from each other." All data sources indicated her strong student-centered orientation. Her comment regarding her entry conceptualization was, "I had no framework whatsoever to start...I did not have anything to build on." Her conceptualization at the termination of the study was very complex and showed a high level of knowledge. She referred to her interactive role as, "they (students) give me...growth." She also said, "It (instruction) really does not fall into place in your mind until you interact with children." Thus, the subjects' view toward the role of the teacher and the student in instruction affected their conceptual development.

Finding Four

THE TEACHER CANDIDATES' CONCEPTUAL DEVELOPMENT OF READING INSTRUCTION IS RELATED TO ASPECTS FOUND IN THE NOVICE-EXPERT BODY OF KNOWLEDGE.

The conceptual development of teacher candidates relates to three aspects from the novice-expert body of

knowledge (DeGroot, 1965; Cazden, 1976; Larkin, 1981). These aspects involve the novice-expert continuum, the qualitatively different conceptual framework between a novice and an expert and the degree of insightfulness between the novice and the expert.

The first aspect is the novice-expert continuum. An individual who possesses little knowledge or a scant content framework is known to have low-knowledge and is considered a novice. An individual who possesses much knowledge or a more complete framework is known to have high-knowledge and is considered an expert. The difference between a novice and an expert can be viewed on a continuum and not on an absolute measure. In this study, Subjects B, C, and D exhibited gradual progress along the continuum toward increased conceptualization. Subjects B and C progressed at a faster rate along the continuum than Subject D. Therefore, Subjects B and C are considered to have high-knowledge or to be more expert than Subject D. Subject A did not evidence increased conceptualization. She did not progress along the continuum. Indications of regression were evident. Thus, the teacher candidates' progressive conceptual development in reading instruction parallels that of the novice-expert continuum.

The second novice-expert aspect is the qualitative difference between conceptualizations. The knowledge of a novice is not considered to be simply less or an

incomplete version of the expert's knowledge. The expert's knowledge is structured in a way which highlights the interrelationships between individual concepts (definers). The subjects' semantic maps and their discussions exhibited qualitatively different structures of their knowledge. Subject B's and C's terminal maps looked like a maze with many interpretations. They indicated numerous interrelationships in their discussions. Subject A's and D's maps appeared more organized and less intricately structured. Their discussions indicated a definite "answer" about reading instruction without other alternatives. Subjects B and C were thought to be more expert than Subjects A and D at the termination of this study.

The extent of insightfulness is the third novice-expert characteristic. The manner in which individuals conceptualize knowledge to analyze and to solve a problem differs. Experts are thought to "see" more than novices. For example, Subject C was able to problem solve and analyze her own lessons. After one lesson, she was able to "see" that she did not do an appropriate task analysis when she taught a specific reading strategy. She also "saw" how she could improve this. In contrast, Subject D could not "see" when an instructional problem existed and thus was not able to solve it. When she gave her students a workbook page that did not match the strategy she taught, she did not "see" that. When students did

not follow her instruction because they did not understand, she did not "see" that. Subject D could not analyze her instruction. Subjects B and C possessed more insight about reading instruction, were able to solve instructional problems and were analytical about their teaching.

All three aspects--the novice-expert continuum, the qualitatively different conceptualization, and the extent of insightfulness--are portrayed in the subjects' conceptual development. Subjects B and C possessed a more developed conceptual framework, had a more interrelated framework of specific knowledge, and were able to problem solve and to be more self-analytical than Subjects A and D. Subjects B and C were seen as more expert. Thus, the subjects' conceptual development of reading instruction relates to aspects in the novice-expert body of knowledge.

Summary

This study resulted in four findings. They are:

(1) Teacher candidates have preconceptions regarding reading instruction when entering reading methods class.

(2) The teacher candidates' conceptions of reading instruction changed. This change occurred in the stages of accretion, restructuring, and tuning.

(3) The teacher candidates' conceptual development is affected by their view toward the role of the teacher and the students in the instructional process.

(4) The teacher candidates' conceptual development of reading instruction is related to aspects from the novice-expert body of knowledge.

Research Questions

In this section, the findings are examined in terms of the research questions asked in this study.

1. How do teacher candidates' understanding of reading instruction change during a reading methods course?

   a. What is the teacher candidates' initial conception of reading instruction?

      The teacher candidates in this study entered reading methods instruction with the conceptualization that the field of education in general is in a hierarchical organizational system, and that the reading instructional process involves various categorized groups such as, "what the teacher uses," and "the methods the teacher uses." They were unsure about the relationship between education in general and reading instruction.

   b. What is the nature of the teacher candidates' conceptual change?

      These teacher candidates' conceptual frameworks of reading instruction went through definable stages--accretion, restructuring, tuning. In accretion, new information from

instruction was "spread out" within their knowledge structures. Next, restructuring "pulled together" instructional information. Relationships within the reading instructional process began to develop. In the third stage, the cognitive structure was adjusted or tuned. The structure became less rigid and explicit. Some cognitive components that were formerly emphasized were eliminated or de-emphasized. More interrelationships and insightful possibilities developed.

c. What is the extent of the teacher candidates' conceptual change at the termination of instruction?

These teacher candidates' terminal conceptualization of reading instruction compared to aspects from the novice-expert body of knowledge. The subjects' conceptualization was not uniform at the end of the study. Each candidate developed along the novice-expert continuum at varying rates. Candidates who became more expert exhibited a qualitatively different conceptual framework of the reading instructional process, and a greater ability to problem solve and to analyze situations than teacher

candidates who became less expert.

2. What factors influence and inhibit conceptual change?

   These teacher candidates' single greatest influence and inhibitor in their conceptual development of reading instruction was their role with students in the instructional process. If a subject was sensitive to the students' instructional needs, the teacher candidates' conceptualization of reading instruction developed and became complex. If the teacher candidate concentrated on teaching content and considered the teacher and student to be separate juxtaposed entities, her conceptualization was impeded.

Summary

This chapter contained three major sections: (1) the description of the teacher education instruction experienced by the subjects during the study, (2) summaries of the data gathered for the subjects, and (3) major findings derived from data analyses.

CHAPTER V

Summary, Significance, and Recommendations

This chapter summarizes the study and major findings, discusses significance, and states recommendations.

Summary of the Study

This descriptive and exploratory study investigates teacher candidates' preconceptions of reading instruction and the changes in their conceptualization during twenty weeks of reading methodology instruction. A preconception is defined as the entry level understanding teacher candidates possess regarding reading instruction as measured by: (1) semantic maps, (2) Proposition Inventory, (3) reading lesson debriefing sessions, and (4) reading definitions. A semantic map is a graphic representation used to illustrate concepts and the relationships between concepts. The Proposition Inventory is a Likert scale instrument which surveys five conceptual dimensions of reading. Debriefing sessions are the reflective discussions the researcher and subject had after the subject implemented reading lessons. Definitions are the subjects' original written meanings of "reading" and "reading instruction."

The subjects were randomly selected from 30 students

enrolled in the Multiple Perspectives Teacher Education Program at Michigan State University during 1983-1984 fall and winter terms.

The subjects constructed four semantic maps of reading instruction during the twenty weeks of the study: (1) September -- before instruction began (2) November -- after eight weeks of instruction (3) February -- after fourteen weeks of instruction and (4) March -- at the completion of twenty weeks of instruction. The Proposition Inventory was administered in September and March. Reading lesson debriefing sessions occurred at the field site three times during the first ten weeks of instruction, and four times during the second ten weeks of instruction. The subjects wrote a set of reading definitions in November and March.

The study used qualitative research techniques. The data were gathered, described, and interpreted. The findings of each subject are given in individual reports and then combined and presented in composite form. The research questions were answered according to the findings.

Two major questions were investigated in this study:

1. How do teacher candidates' understanding of reading instruction change during a reading methods course?
    a. What are the teacher candidates' initial conceptions of reading instruction?

b. What is the nature of the teacher candidates' conceptual change during instruction?

c. What is the extent of conceptual change at the termination of instruction?

2. What influences and inhibits conceptual change?

Summary of the Findings

Four major findings resulted:

1. Teacher candidates have preconceptions when entering reading instruction.

   All the subjects divided the definers on their pre-instructional semantic maps between education in general and reading instruction. The subjects arranged the definers in a combination of a hierarchical and a categorized system. They placed the general education definers in a hierarchical ordering and the more specific reading terms in groups or categories. For example, the subjects put general education definers such as "education" and "school" in a hierarchical order and definers such as "sight words" and "phonics" in groups or categories. Thus, as evidenced in their maps the subjects entered reading methods instruction with an organizational knowledge of reading instruction.

2. Teacher candidates' conceptual framework of reading instruction did change. The change occurred in stages during instruction.

   During instruction the subjects' conceptual frameworks of reading instruction changed. This change appeared to proceed through the definable stages of accretion, restructuring and tuning.

3. Teacher candidates' conceptualization of and change in reading instruction is affected by their view toward the role of the teacher and the role of the student in the instructional process.

   According to the cognitive developmental theorists, conceptual development and growth occurs between an active learner and the environment. The subjects of this study were the active learners and the environment was their students. If the subject interacted with the students and was sensitive to their instructional needs, the teacher candidates' conceptualization of reading instruction developed and became complex. If the subject was content-centered and considered the teacher and student to be separate entities, her conceptualization was impeded.

4. The teacher candidates' conceptual development of reading instruction is related to aspects found in the novice-expert body of knowledge.

   Three aspects from the novice-expert body of

knowledge offer further understanding into the conceptual development of teacher candidates.

First, the teacher candidates' conceptual development can be plotted along the novice-expert continuum to indicate progression in conceptualization of reading instruction. Second, the knowledge framework of a novice is not just less or an incomplete version of the knowledge framework of the expert. The knowledge structure of the expert has more interrelationships shown between individual concepts (definers) than a novice. The subjects' semantic maps and discussions exhibit qualitatively different frameworks. Third, the amount of information that individuals assemble to solve a problem and their ability to analyze a situation differs. Experts are thought to be more insightful than novices. The experts draw insight from a greater conceptual framework. A subject with a more interrelated framework of reading instruction is able to problem solve and be more self-analytical than an individual who has a less developed conceptual framework.

In summary, the four major findings in this study are: (1) Teacher candidates in this study had preconceptions about reading instruction when entering reading methods class. (2) The teacher candidates' conceptions of reading instruction changed. This change followed through the stages of accretion, restructuring, and tuning. (3) The teacher candidates' conceptual

development was affected by their view toward the role of the teacher and the students in the instructional process. (4) The teacher candidates' conceptual development of reading instruction was related to findings from the novice-expert body of knowledge.

Significance

This study's greatest significance was that it provided an initial thrust into a new field of inquiry--the investigation of teacher candidates' conceptualization of reading instruction. The findings are also important because: (1) they added to the body of research in teacher education, with not only pre and post research data, but also interim data collected during the study and (2) they related to other growing bodies of knowledge including knowledge acquisition, cognitive development, and novice-expert studies.

Over fifteen years ago Stephens (1969) suggested to educators that a unique quality of the prospective teacher is that the candidate "does not come to us as an inert, empty memory drum." This study expands upon Stephens' concept to reveal that teacher candidates begin education courses with distinctive preconceptions of both the field of education in general and also of reading instruction. This study focused specifically on reading instruction. This research revealed that teacher candidates exhibit an awareness of a hierarchical structure in the area of education and more

particularly perceive reading instruction to be in categorical groups or sets. Knowledge and enhanced awareness of teacher candidates' preconceptions about reading instruction is important to reading educators for future consideration. First, this finding would suggest that educators need to identify the diverse preconceptions of their teacher candidates. Next, reading educators could then adjust instruction to account for the teacher candidates' existing entry beliefs about reading. Subsequently, reading educators could develop and modify their curriculum to accommodate the varying needs of students as they develop and grow in their conceptualization of reading instruction. Thus, the distinctive contribution of this research was that it provided an initial thrust into a new field of study--the investigation of teacher candidates' conceptualization of reading instruction.

Another finding in this study revealed that teacher candidates' conceptions change. This change gradually emerged through stages during methods instruction. As the candidates changed from their initial conceptual framework into the first stage, the concepts presented in instruction appeared to be isolated from one another or "spread out." During this first phase or stage, the teacher candidates retained concepts from classroom presentation, but they were unable to understand relationships among the concepts. Norman (1978) refers to this stage as accretion. This finding suggests that the

teacher educator who recognizes that teacher candidates cannot yet synthesize the reading instructional concepts could provide the students with an appropriate structure and framework upon which to relate their recently acquired information. The assistance provided by the teacher educator during this first stage would help the candidates to reach the second stage which Norman refers to as restructuring. This study showed that during this restructuring stage, teacher candidates "pull together" information presented in class. The teacher educator could continue to provide experiences and instructional activities to further the restructuring process and development toward the third stage. Norman refers to this third and final stage as tuning. He defines this stage as a simultaneous decrease in the specific organized and structured framework with an increased interrelated conceptualization. This study revealed that in a reading instruction course not all candidates attain the final stage of reading conceptualization. This research suggested that teacher educators' awareness and identification of teacher candidate stages could aid candidates to reach the tuning stage at the culmination of their reading methods instruction.

Furthermore, this study validated the views of Floden and Feiman (1981) and other cognitive developmental theorists. This study confirmed their belief that "trainees" operate under different stages of development.

During the twenty weeks of this research the same instruction was presented to all subjects. At three intervals throughout the study, the subjects' conceptualization was monitored and graphically illustrated through semantic maps. These semantic maps revealed that the subjects organized the same information differently depending upon their unique stage of conceptual development. The maps also indicated that some subjects were never able to synthesize the information in order to internalize the instruction. For these students, learning about reading instruction appeared to be a matter of rote-memory or acquiring "the answer." The maps of these subjects did not exhibit evidence of the tuning stage. This finding would suggest to reading educators the need to take into consideration the various conceptual stages of the candidates not only at the beginning of instruction, but throughout the course. Curriculum and instruction would need to be developed and modified to assure that individual students' conceptualization is enhanced. For example, if a candidate's semantic map reveals a confusion or difficulty in restructuring a group of related instructional components, the instructor could directly assist the student to relate these concepts. With the map as a diagnostic tool, the instructor would be able to identify accurately the source of the subject's confusion.

A third finding of this research indicated that

conceptual change is affected by teacher candidates' views of and interactions with their environment. The learner must be active and interact with the environment for conceptual change to occur. Floden and Feiman (1981) point out that the "individual is an active agent in both motivation and direction of change." In other words, the individual's interaction with the environment is crucial to that individual's conceptual development. This finding suggests that to further the candidates' conceptualization teacher educators need to teach them about the importance of the candidates relating to and responding to their students' instructional needs. For example, when a teacher candidate's data reveals a content-centered rather than a student-centered emphasis, the teacher educator would need to intervene directly and develop instruction to encourage increased interaction. The subjects in this study who were sensitive to their students' instructional needs developed a complexly interrelated, insightful, and flexible conceptualization of reading instruction.

This research also contributed to the body of knowledge needed in the field of teacher education for pre, interim, and post data collection. As Turner (1975) said, "The amount of dependable information available compared to the amount needed to formulate more effective policies and practices of teacher education is miniscule." This study offered specific information about teacher

candidates' conceptualization of the reading instructional process. Also Tabachnick, Popkewitz, and Zeichner (1979-80) contend that much of the research in the field is limited in its focus when only pre and post data are studied. They feel that interactions are not evident and important issues are not addressed. This research not only studies the teacher candidates' conceptualization of reading instruction throughout the twenty weeks of the reading methods class, but this study also investigated their interim interactions with the environment.

Next, this study related to other bodies of knowledge including acquisition of knowledge, cognitive development, and novice-expert studies. For example, the findings suggested parallelisms between the teacher candidates' conceptual change and the novice-expert line of research. Teacher candidates' conceptual development can be plotted along the novice-expert (low to high knowledge) continuum. Another novice-expert relationship this study suggested was the qualitatively different conceptualization between a novice and an expert. Experts exhibit more interrelationships within a particular knowl- framework than do novices. Problem solving and analyzing was a third novice-expert characteristic this study suggested. Experts are thought to be more insightful than novices. They are able to solve problems and analyze situations more effectively and efficiently than novices. Novices have an insufficient conceptual framework from

which to draw this higher level of thinking. The relationships to other fields of knowledge suggested in this study provide valuable information to the field of teacher education for its ultimate improvement.

In summary, this study's greatest contribution is that it opened a new area of inquiry--teacher candidates' conceptualization of reading instruction. Other important aspects include: (1) additional research in teacher education, (2) characteristics of teacher candidates' conceptualization during instruction, (3) relationships drawn from other bodies of knowledge.

Recommendations

There is a tendency for teacher educators to immediately use findings from studies such as this to alter their course outlines and techniques of instruction. Even though the findings from this study do make such suggestions, this study was not meant for this purpose. It was designed to ask rather than answer questions. Did the particular reading methods instruction affect the rate or stages of conceptual change? Would subjects' conceptual change develop in a different manner with another type of instruction? What personal factors account for subjects' change? How can teacher educators assess individual developmental levels? How can these various levels be accounted for in instruction? Should class work include specific instruction regarding interaction with the subjects' environment? Thus, this study was

intended to describe and explore. The study was meant to primarily provide entry information into a new field of inquiry and to provide suggested avenues upon which to build future investigations. Consequently, recommendations for research, rather than practice, are discussed.

The following discussion suggests a set of methodological revisions and a research agenda:

1. Methodological Revisions--Before any further research is planned, more highly developed semantic mapping procedures, interview questions and probes, informal data, technical features, and assessment measurement scales need to be formulated.
   a. Semantic Mapping--Even though the maps provided an effective tool for "seeing" conceptualization, the procedures were cumbersome. More efficient streamlined ways to physically handle the definers and to construct the maps need to be developed. A method should be devised so it is not necessary to tape the definers on the paper. The development of a computer program for semantic mapping appears most desirable.
   b. Interview Questions and Probes--Interview questions and probes were not routinized. An interview protocol needs to be constructed which achieves a balance of formality and friendliness. Guidelines need to be

established about the degree and amount of probing and length of time a subject is allowed to get "off the track" or hesitate.

c. Informal Data--During the study much information from the subjects was revealed informally to the researcher. These data should be included as field notes in the design of future studies.

d. Technical Features--The physical environment during the mapping sessions was not always quiet or private. Plans should be made for a specified environment, e.g., soundproof private room, video taping in addition to audio taping the sessions is advisable. Specific arrangements for transcribing the audio tapes from the mapping sessions are essential.

e. Assessment Measurement Scales--The study produced a large amount of data with no prescribed method of assessment. Scales, inventories, and checklists need to be developed to aid in the assessment and description of the data. Descriptors need to be developed to describe, analyze and interpret a semantic map. Inventories and scales need to be formulated for analyzing transcribed data.

2. Research Agenda--Research studies need to follow the improvement of methodological procedures.
   a. Descriptive Research--Several small descriptive studies within the confines of a large one need to be designed. Basically, the larger study would replicate, as much as possible, this study using the methodological improvements previously described. Each smaller study would involve a wide-range population of teacher candidates from different states, different philosophical teacher education programs, and/or different instructional methodologies. Attention should be given to individual subject background information such as, age, academic ability, and experience with children that may influence conceptualization. The findings of this follow-up study would present a clear view of the most cogent teacher candidates' conceptual features for future study. Do these study findings substantiate or contradict the ones in this study? Are there additional findings? With the findings from this comprehensive study, a series of smaller studies can be designed under an "umbrella" study. Each small study would investigate one of the salient findings from

the previous studies, e.g., preconceptions or stages of conceptual change. The compiled data would present findings to set the circumstances for designing experimental studies.

b. Experimental Research--Experimental studies need to be conducted until enough evidence is gathered to begin making recommendations to teacher educators for specific instructional and program improvement.

c. Development--After the research findings have been reported, the researcher's task is not finished. Research findings do not automatically change or improve instruction. Findings must be translated into information that can be clearly communicated to teacher educators. Plans should be formulated to translate the findings into teacher education practice and instruction. Lanier and Floden (1978) suggested that systematic development efforts must be undertaken to: (1) re-examine, translate and articulate findings, (2) examine how best to teach the findings to adults, (3) give attention to the findings in relationship to the determination of teacher education goals. For instance, if it is found

that teacher candidates change conceptually through stages, this finding must be translated as to what it really means, how to communicate this knowledge to teacher educators, and how they should account for the information within a teacher education program.

Since this is a descriptive study, its recommendations are for further research and not implications for immediate instructional change. As noted above, further research suggestions include: (1) development of sophisticated measurement and assessment procedures, (2) more descriptive studies, (3) experimental research with strong emphasis to translate research findings into specific procedures. The ultimate goal is to improve teacher education.

Summary

This chapter contained three sections. First, the study and its findings were summarized. This study investigated teacher candidates' conceptual change of reading instruction during reading methods instruction. The findings suggest: (1) teacher candidates have preconceptions about reading instruction, (2) teacher candidates' conceptions change individually through stages, (3) candidates' interaction with the environment affects conceptual development, and (4) teacher candidates'

conceptual development may be paralleled with the novice-expert body of knowledge. Second, the significance of this study was discussed. Its major importance is that it opens a new field of inquiry in teacher education. Third, methodological and research suggestions were given.

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APPENDICES

APPENDIX A

SUBJECT A

Introduction

Subject A's data are reported in three phases. First, data from her first semantic map and Proposition Inventory comprise the pre-instructional phase. Second, the instructional phase includes data from her second and third semantic maps, debriefing sessions, and two sets of written reading definitions. This phase is reported in three segments for greater clarity. Third, the post instructional phase contains data from her last semantic map and the second Proposition Inventory. The data are related to the instruction taking place during the study and to the reading teacher educator's semantic map and Proposition Inventory. At each phase the data are analyzed by the criteria specified in Chapter III. Interpretation of the data is made of Subject A's conceptualization of reading instruction according to the class and property relationships on a semantic map (Johnson and Pearson), the learner's interaction with the environment (Floden and Feiman) and expert-novice studies (DeGroot). The data from the three phases are summarized and discussed in terms of the research questions.

Pre-instructional Phase

In the pre-instructional phase Subject A constructed a semantic map and completed the Proposition Inventory.

Semantic Map. Subject A called her initial map (see Figure A 1) of reading instruction the "Tree of Knowledge." She began the construction with general education definers such as "education" and "school" at the bottom of the paper. She worked toward the top of the page and formed three large branches which she called objectives. One she called "professional prior knowledge." Within that branch were the definers "direct instruction," "monitor," and "explain." The second objective was "strategy" and it was divided into two smaller branches. One was "free reading" and "activity." The other included "task," "basal text," and "vocabulary." Her third branch included "objective," "expectation," and "readability." She eliminated "concept" and "assess" on the map. In her verbal discussion, she listed definers with little or no explanation. She used words like "we need" to connect listings of definers. One listing consisted of ten definers.

Thus, according to the criteria for analyzing semantic maps, Subject A's map was a branched and connected hierarchy. She included all of the definers in the discussion in lists with no explanation or elaboration. Her map was similar to the reading teacher educator's in

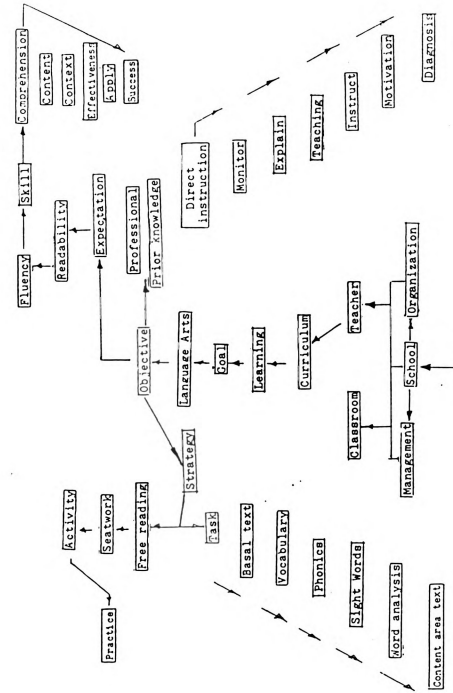
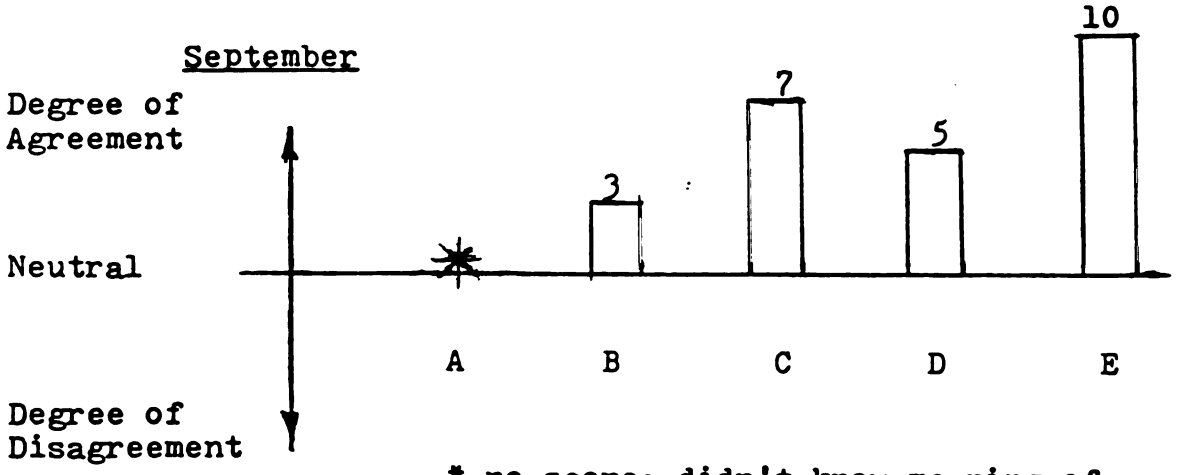


Figure A1 Subject A-September Semantic Map

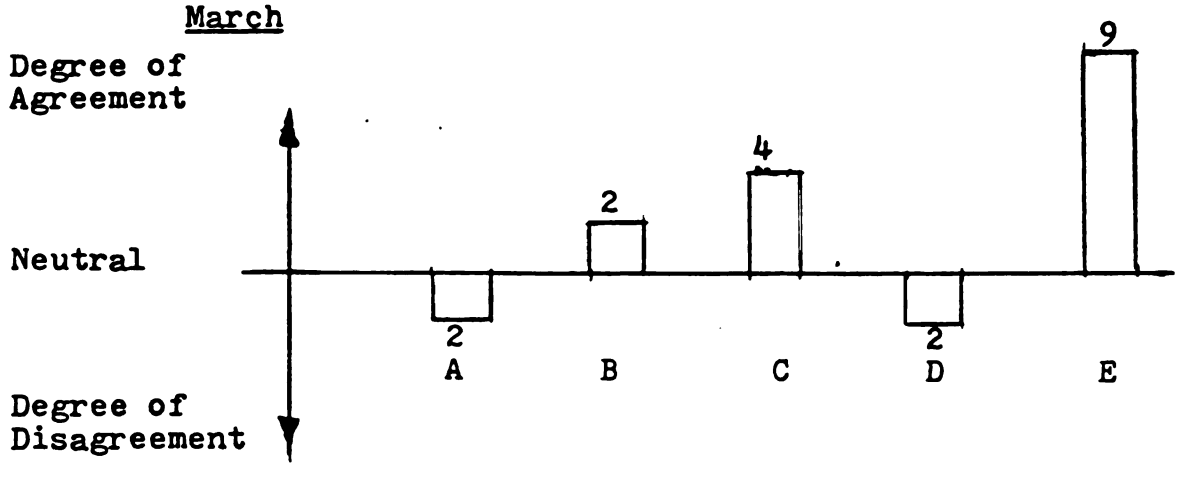
three ways. First, they were both connected and branched, although his was more linear and hers was more hierarchical. Second, they shared some common general education definers like "education" and "school." Third, they agreed on two common areas of the definers "direct instruction" and "strategy."

Proposition Inventory. On Subject A's first Proposition Inventory (see Table A 1) she had no score for the basal text section because she did not know the meaning of basal text. She rated the linear skills statements as moderate agreement with a net score of +3. She agreed with five statements and was neutral about two. One agreeable statement was, "I believe that reading is a difficult process which must usually be taught in a step-by-step sequence if we are to develop good readers." The interest area was rated as high agreement with a score of +7. She expressed strong agreement with the statement, "I believe that an important indicator of reading growth is how often a pupil voluntarily uses reading in his daily life." She did not disagree with any statement in this area. She rated natural language with a score of +5. She expressed a strong agreement with the statement, "I believe that reading materials should help children learn to read in a natural manner similar to the way they learned to speak." Although she did not disagree with any statements in this area, she did rate four as

Table A1 Subject A Proposition Inventories



* no score; didn't know meaning of basal text



Content Centered	Student Centered
A - Basal Text	C - Interest
B - Linear Skills (Content)	D - Natural Language
	E - Integrated Whole

neutral. She strongly agreed with the integrated whole area with a score of +10. One of the seven statements she strongly agreed with was, "I believe that the goal of developing comprehension is best achieved by giving pupils realistic reading problems which they see as meaningful in their lives."

Thus, Subject A rated all three student-centered areas with scores of strong agreement. Although she did agree with the content-centered linear skills area, it was not as highly rated as any one of the other three areas.

Summary. Subject A's data gathered in the pre-instructional phase exhibited knowledge of education in general and reading instruction. She constructed a cohesively connected and branched map which was similar to the reading teacher educator's in three aspects. Her map showed a reading organization with three objectives leading from a general education hierarchy. Although her discussion included all of the definers, most were mentioned in list form. Her Proposition Inventory, a secondary source, showed stronger agreement in the child-centered areas of reading instruction rather than in the content areas. Again, this representation was similar to the reading teacher educator's.

Interpretation. Subject A's pre-instructional conceptualization of reading instruction was an organized knowledge of the class relationship of education in

general. She related the classes to two groups of reading instructional properties. She viewed the teacher as interacting with the instructional framework rather than with the environment (student). On a novice-expert (low to high knowledge) continuum, she appeared to possess a moderately low-knowledge conceptualization of reading instruction. Thus, in the judgment of the researcher, Subject A's preconceptualization of reading instruction was a systematic organization focused on objectives from which the reading instructional process developed without significant concern for the student.

Instructional Phase - Segment One

In the first eight weeks of instruction (Segment One), Subject A attended reading methods and educational psychology classes, took part in debriefing sessions after implementing reading lessons with her tutee, wrote definitions of reading and reading instruction, and constructed a second semantic map at the end of the segment.

Debriefing Sessions. Early in this segment, the researcher needed to remediate instruction with Subject A. Subject A exhibited confusion about the concept of contextual meaning during a lesson. When the researcher reminded her that the purpose was to get contextual meaning rather than to identify a word from a flash card she said, "No, right. No, I know. Yeah. I was not really sure." But this confusion remained two weeks later during the next debriefing session. This time, Subject A

defended her position and felt that her "confusion" was correct.

Thus, during debriefing sessions there was evidence that Subject A was resistant to accepting instruction.

Reading Definitions. During this segment she wrote a set of reading definitions. Her definition for reading was:

> Reading -- is fun. It should be enjoyable and yet instructive. By reading and enjoying it, it should also make learning easier and overall more enjoyable.

This definition contained two major instructional themes -- enjoyment and instruction. Since both themes were regarded as outcomes of reading instruction and not the meaning of reading, this was not considered a true definition of the term reading.

Her definition for reading instruction was:

> Reading instruction -- is teaching sight words and comprehension through context.

This definition alludes to the major instructional stress in this segment of word identification. Subject A did not specifically state this but mentioned two types of word identification through teaching for contextual meaning and sight words. Thus, neither meaning in her definitions was a true representation of instruction.

Semantic Map. Subject A then constructed her second map. From the branched and connected shape of the "Tree of Knowledge" in Subject A's first map, her second map (see Figure A 2) became very hierarchical. She

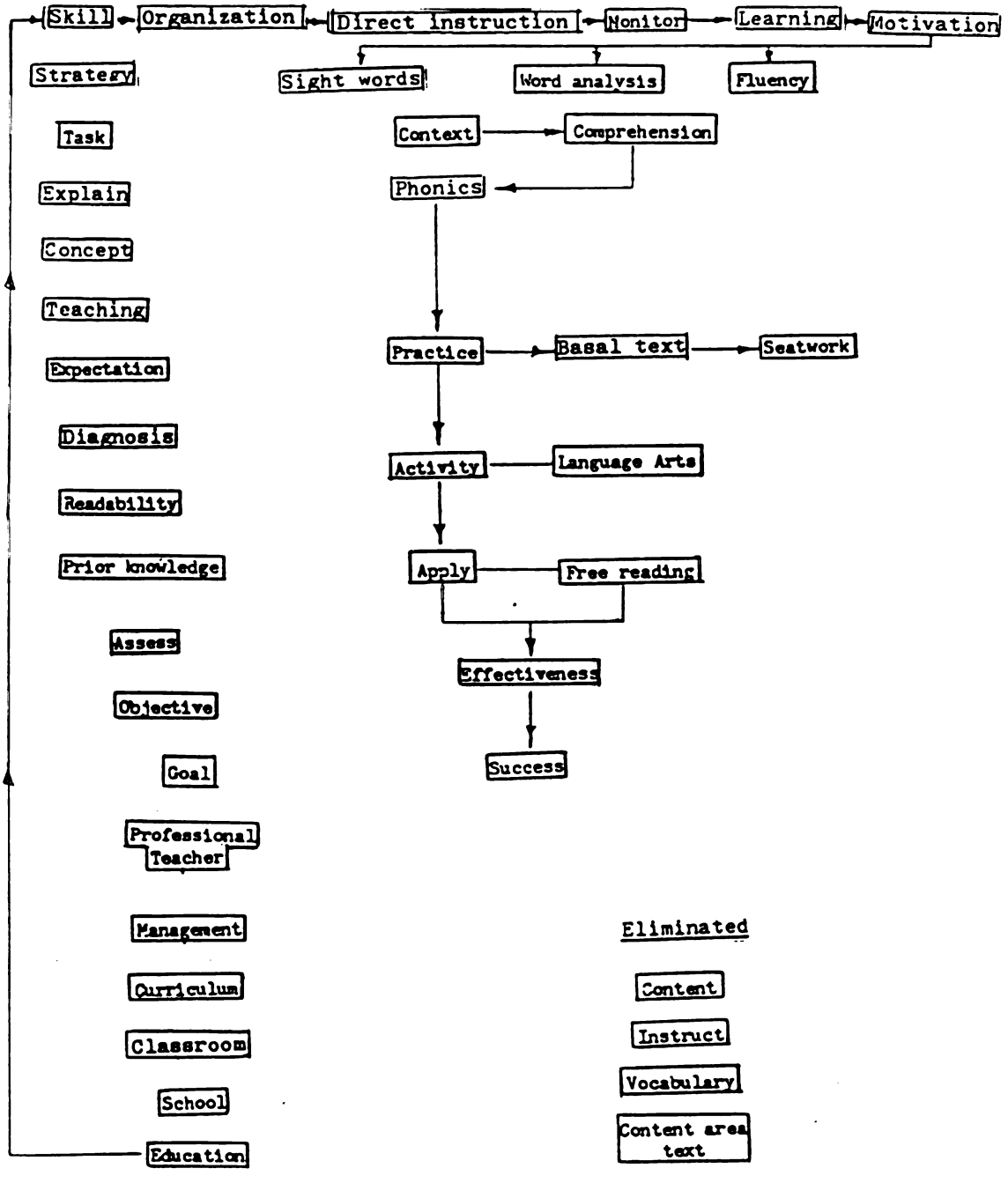


Figure A2 Subject A-November Semantic Map

began again at the bottom of the paper with general education definers like "education," "school," and "classroom," and continued to the top of the paper. She then went across and then down on the paper. She said the definers from "education" through "organization" were reordered in her mind according to her educational psychology class. (The definer "readability" included in this list was not from instruction.) She said that section of definers was the "what" of education. From the definers "direct instruction" through the remainder of the map was the "how" of reading instruction.

She eliminated four definers -- "content," "instruct," "vocabulary," and "content area text." "Content" and "instruct" were both presented in methods class during this phase. Two of the definers that she had eliminated in her first map "concept" and "assess" were included in the "what" section on this map. This discussion included connective phases between definers that denoted sequence such as "first they will need to...," "and then they...," and "after that they...." She said she knew "more about the subject now than the first time."

Subject A's second map was not similar to the reading teacher educator's in shape and groupings of definers except both maps began with the general definers of "education," "school," and "classroom." Thus, Subject A's second map was a different shape from her first one. She discussed the definers as they had been introduced in

educational psychology and reading instruction.

Summary. Subject A's secondary data gathered during Segment One indicated confusion regarding instruction during debriefing sessions and reading definitions that did not reflect instruction. The map, the primary data source, showed a long hierarchy of educational psychology definers in the first half and reading instruction definers in the second half.

Interpretation. After eight weeks of instruction Subject A's conceptualization of reading instruction was very structured and organized with a distinct non-integrated separation between classes and properties. She appeared to totally abandon her initial framework and began to construct a new one. At this time she had difficulty relating this new developing structure to her environment (tutee). On a novice-expert (low to high knowledge) continuum, she appeared to have regressed to have a low-knowledge conceptualization of reading instruction. Thus, in the judgment of the researcher Subject A's first interim conceptualization of reading instruction was an entirely new unfocused organization showing experimentation and confusion.

Instructional Phase - Segment Two

In the next six weeks of instruction Subject A continued to participate in reading methods class, completed the educational psychology class and began the classroom organization and management class, continued to take part

in debriefing sessions, and constructed a third semantic map at the end of the segment.

Debriefing Sessions. During one debriefing session in this segment the researcher and Subject A discussed motivation. Subject A saw no reason to provide motivation at the beginning of a lesson as taught in reading methods. Subject A said, "Why? What difference does that make, whether I say it (a motivational reference) at the beginning or at the end?" A second debriefing session focused on contextual meaning. The researcher told Subject A that she now exhibited a clearer understanding of contextual meaning than her previous lessons indicated. A third debriefing session focused upon Subject A introducing a story with vocabulary words to a reading group. This introduction of vocabulary was part of a Directed Reading Lesson (DRL) which was demonstrated in the reading methods class. Subject A introduced the vocabulary, but she neglected to assess the group's understanding of what she had introduced. The researcher talked with her about this.

Researcher: What evidence do you have that they did understand your words today that you were teaching?

Subject A: That's hard because I just could feel that they knew. I could feel that they were -- that they...

Researcher: But feeling is not evidence. Every time you brought up a new word, you discussed it, you said OK, and you continued going.

Subject A: I should have asked them.

Researcher: At that point there should have been some sort of interaction using examples, non-examples, or background experience. Do you ever use yarn at home? Has your mother ever used yarn? What is yarn?

Subject A: I see. Yeah, I should have asked them more questions.

Researcher: Do not assume...find out, do not feel--get hard evidence.

Subject A: OK--yeah, that is where I really messed up. I did not even think about that.

Thus, during this segment Subject A showed evidence of understanding the concept of contextual meaning that she had not in Segment One. Twice during the debriefing sessions she exhibited evidence that she had not incorporated reading instruction.

Semantic Map. Subject A began her third map (see Figure A 3) in February in the same hierarchical order as she had done in November except it began at the top of the paper instead of at the bottom. At three points this hierarchy showed single connections with other definers. The second half of her hierarchy from November composed of reading definers became branched and connected. In her discussion, she listed the strategies of "sight words," "phonics," "word analysis," "context," and "comprehension" from reading instruction but did not explain them. She talked about how much more important she felt "comprehension" and "prior knowledge" were this time than they had been before, and how "motivation" was "a driving

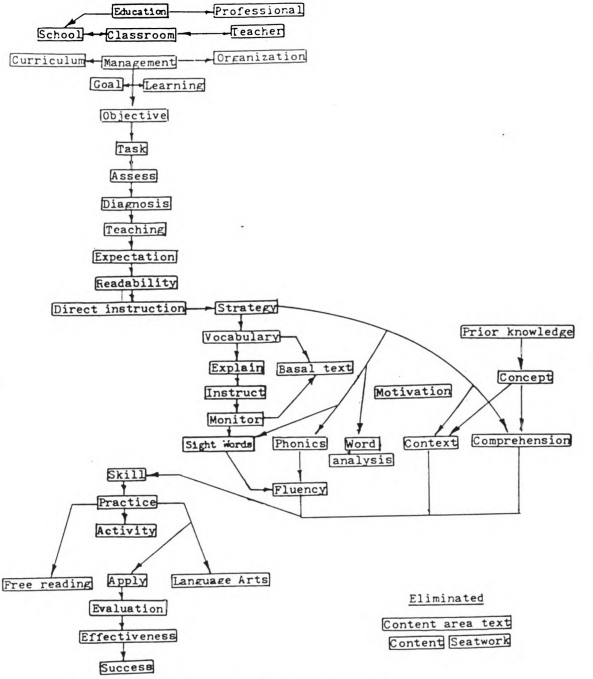


Figure A3 Subject A-February Semantic Map

force" or "some kind of purpose...to want to learn." She also discussed the definers "practice" and "application" more in this discussion. She used "application" in her lesson implementations with activities like USSR and "language arts." She added the definer "evaluation." She said,

> I think evaluation is very important. You need to realize even if you are teaching it they might not get it and if they have not gotten it then you have to know if they have or have not. So whether you should go back and reteach or apply some other strategy to their learning.

The referred to the student from the aspect of the teacher "doing it" to the student -- "assessing," and "setting expectations for." The student was not put in an interactive role with the teacher. She eliminated three definers -- "content area text," "content," and "seat work." She said that she felt "seat work" needed to be included but it just did not fit into her map. In her discussion regarding the maps she said, "I think this is getting harder each time I do it. It seems the more I know, the less I know." She and the reading teacher educator each began their map with a hierarchy of general education definers.

Summary. In Segment Two Subject A showed evidence of understanding the concept of contextual meaning that she misunderstood in Segment One. On her map, the primary data source, she displayed a branched and connected structure in the reading instruction area. She also

offered more explanation of specific definers.

Interpretation. After fourteen weeks of instruction Subject A's conceptualization of reading instruction had developed to include relationships among the general education classes, among the reading instruction properties and also between the classes and properties. She saw this framework to be superimposed, without interacting, upon the environment (student). On a novice-expert (low to high knowledge) continuum she progressed significantly to the middle range. Thus, in the judgment of the researcher Subject A's second interim conceptualization of reading instruction was an organization focused on the necessity of a direct instructional process of reading instruction with its many components.

Instructional Phase - Segment Three

In the last instructional phase Subject A continued to participate in reading methods class, the classroom organization and management class, and the debriefing sessions. She also wrote a second set of reading definitions.

Debriefing Sessions. During a debriefing session in this segment Subject A showed evidence of recognition of the major instructional theme to have the process rather than the product drive the lesson.

> Subject A: You see they (the students) just doing it but not realizing how they were doing it. So then when they got to the harder ones, you know, then they kinda applied the strategy. And so I was trying to

> emphasize the strategy. And I felt they were going too fast and not concerning themselves with <u>how</u> to do it, but by just getting it (the answer).

At this session the researcher also discussed with Subject A her understanding of the difference between practice and application as they had been taught in reading class. She discovered that Subject A did realize the difference but did not relate this knowledge to her lesson implementation.

Thus, during the third segment of debriefing sessions Subject A showed evidence of conceptually understanding what had been presented in reading even though she was not consistent in applying it.

<u>Reading Definitions</u>. During this segment Subject A wrote a second set of reading definitions.

Her definition for reading follows:

> Reading -- is picking up any book, sitting down, saying the words on the page and extracting meaning from them. The last point is very crucial because to me if you can just say the words but not obtain meaning from them you are not reading.

This definition contains one major theme and elaboration from reading methods -- the meaning-getting aspect of reading.

Her definition for reading instruction was as follows:

> Reading instruction -- is learning how to read. It is testing specific strategies to teach or help a student be a better reader. It is functions that are taught for the individual to further his own reading without the help of the instructor. Anyone can be told the word you do not know but reading instruction is when you say this is how you figure out the word you do not know and you can do it with

other words that you do not know.

This definition contains two main themes and elaboration from reading instruction: (1) teaching strategies, and (2) metacognative awareness.

Summary. During the last segment of instruction Subject A exhibited conceptual incorporation of instruction during debriefing sessions and stated three major themes from instruction in her second set of reading definitions.

Post Instructional Phase

In March, after twenty weeks of instruction, Subject A took the Proposition Inventory again and constructed a fourth semantic map.

Proposition Inventory. On the Proposition Inventory (see Table A 1, p.154) she rated the basal text area that she did not in September with a score of -2. She disagreed with or was neutral in seven out of nine statements. She disagreed with statements like, "I believe that I should spend an equal amount of time with the low, middle, and high basal text groups."

She mildly agreed with the linear skills area with a net score of +2. She agreed or was neutral with seven out of nine statements. An agreeable statement was, "I believe that reading is a difficult process which must usually be taught in a step-by-step sequence if we are to develop good readers." Subject A was in mild agreement with the interest area (+4). She rated seven out of nine

statements from strong agreement to neutral. One of the strongly agreed with statements was, "I believe that children should be allowed to choose the stories and books they want to read during the regular reading period." The natural language area had a net score of -2. She disagreed with a majority of the statements like, "I believe that the teacher's role is to emphasize the communication aspects of reading more than the skills." She rated the integrated whole area as strongly agreeable (+9). Seven out of nine statements were rated as strongly agreeable or agreeable. One strongly agreeable statement was, "I believe that the teacher's role is to involve pupils in realistic reading tasks which illustrate the functional utility of reading."

Thus, the content-centered areas, basal text and linear skills, were rated as -2 and +2. She rated two of the student-centered areas, interest and integrated whole, with +4 and +9. Natural language received a -2 rating which indicated confusion and/or contradiction since the other two student-centered areas received high ratings.

There were two basic differences between her September and March inventories. First, she rated the basal text area since she had learned the meaning of the term. Second, the natural language statements changed from +5 to -2. This rating did not reflect instruction and did not agree with the other two high student-centered ratings.

In March three out of five areas (basal text, linear skills, and integrated language) were within two points of the reading teacher educator. In the interest area her score was four points higher than his. Her ratings were closer to his in March than in September except in natural language where her score was eight points lower than his. This indicated that she incorporated reading instruction and conceptual change occurred.

Semantic Map. The structure of Subject A's fourth map (see Figure A 4) was like the beginning of the others in the area she called the "what" -- general education definers. The "how" section (reading definers) of this map unlike her previous map which became branched and connected, was in a hierarchy.

The shape and general arrangement of the definers were in a hierarchical order. The only location that branching or connections occurred, other than single connections, was around "strategy." "Strategy" was a major instructional theme. Her map was not similar to the reading teacher educator's except at the beginning of the general education hierarchy and the cluster of definers around "strategy."

Summary. Subject A's data during the post instructional phase included a hierarchical arranged map and the Proposition Inventory indicated confusion and/or contradiction in the natural language area.

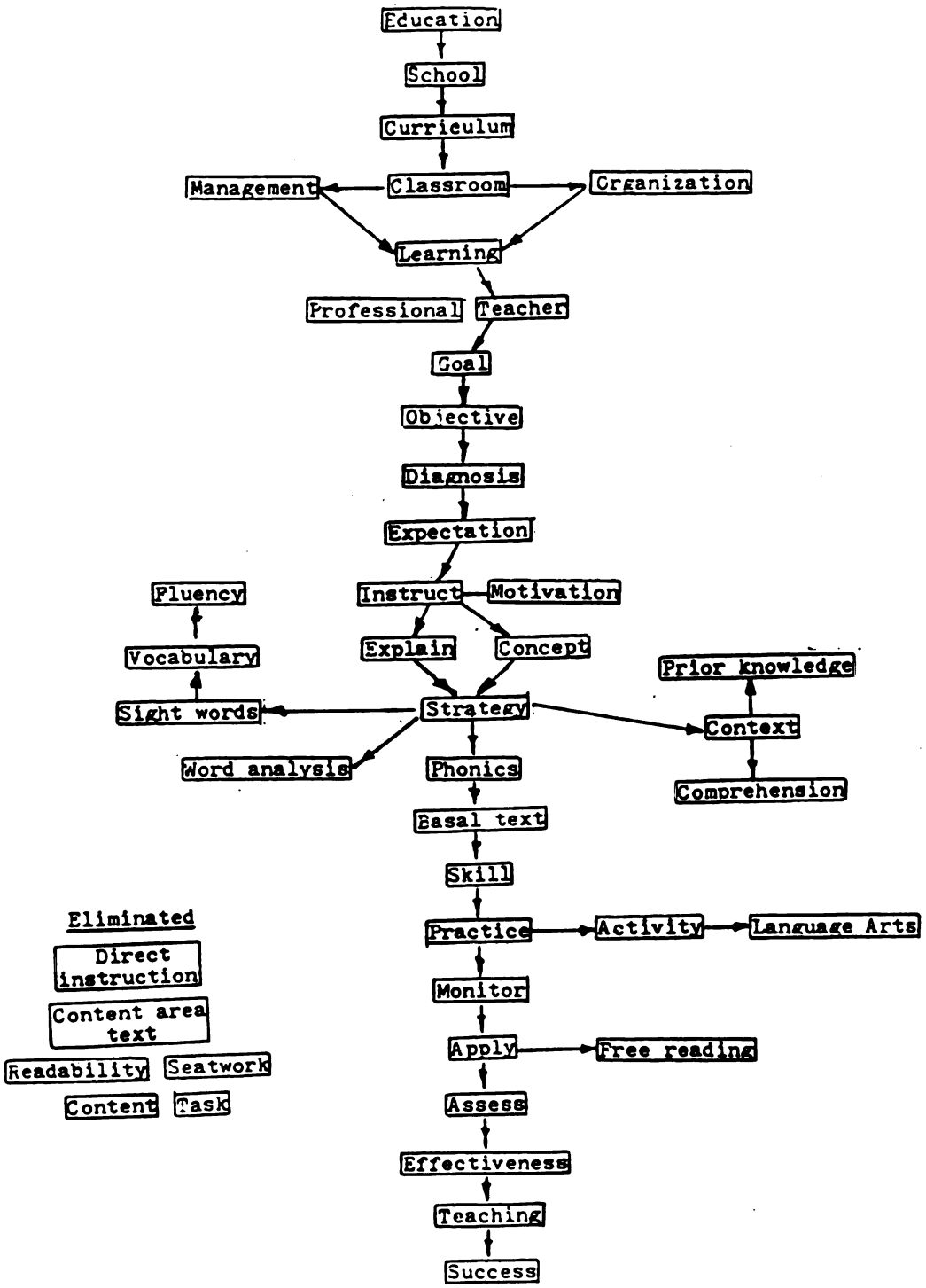


Figure A4 Subject A-March Semantic Map

Interpretation. After twenty weeks of instruction Subject A's conceptualization of reading instruction was very structured and organized with a non-integrated separation between general education classes and reading instruction properties with one set of related properties. Again, it appeared that she had regressed in her conceptual development. Her present framework was less related than the previous one. She continued to think of her conceptualization as not including interaction with the environment (student). On a novice-expert (low to high knowledge) continuum, she appeared to have regressed to have a low-knowledge conceptualization of reading instruction. Thus, in the judgment of the researcher Subject A's terminal conceptualization of reading instruction was a very structured and organized step-by-step approach to the reading instructional process with only a rigid cognitive concern for the student.

Summary of Data

Subject A's first map was a branched and connected hierarchy showing reading instruction in large categories branched from general education. Her second map was a strict hierarchy separating educational psychology and reading instruction. The third map was again a branched and connected hierarchy emphasizing the direct instruction of strategies. The last map was a hierarchy again with some emphasis on strategies. The ratings changed between Subject A's first and second Proposition

Inventories. The second inventory showed more similarity in ratings with the reading teacher educator's except in natural language. Her teaching did not corroborate this. She emphasized Language Experience Activities with her tutee which are based upon using a student's own language in reading. The sets of reading definitions indicated some incorporation of instruction. The debriefing sessions gave evidence that Subject A misconceived instruction and needed remediation at least once before change occurred.

Summary of Interpretation

Subject A's conceptual development of reading instruction did not progress steadily. Although she continued to have an organized knowledge of the general education classes, their relationship to the properties and sets of properties of reading instruction were erratic. She appeared to abandon her initial conceptualization and to begin a new one. This appeared to progress but then regressed at the termination of instruction. She never included the environment (student) in her conceptualization. She imposed her knowledge onto the environment. On the novice-expert (low to high knowledge) continuum, she went from moderately low-knowledge, to low-knowledge, to middle-knowledge, to low-knowledge.

Thus, Subject A's conceptualization and change subsequently was puzzling. Progress was not stable or easily explained. Evidence indicated that her greatest movement

toward change took place at the second interim point rather than at termination. A real question remains as to her development and her final conceptualization of reading instruction during this study.

Research Questions

1. How do teacher candidates' understanding of reading instruction change during a reading methods course?
   a. What is the teacher candidate's initial conception of reading instruction?

      Subject A's data indicated that she conceptualized reading instruction in large areas -- general education, instruction, and knowledge needed by the teacher. She espoused to believe in student-centered reading instruction emphasizing the student's interest, natural language, and reading as an integrated whole. Other evidence did not substantiate this.

      In the judgment of the researcher Subject A's preconceptualization of reading instruction was a systematic organization focused on objectives from which the reading instructional process developed without significant concern for the student.

   b. What is the nature of the student's conceptual change?

Subject A's data indicated that her extent of conceptual change went from: (1) an entry level of general education classes and set of reading instructional properties, (2) to a dichotomy between the instruction in educational psychology and reading methods instruction, (3) to a branched and connected hierarchy emphasizing strategies within reading instruction, and (4) to a hierarchical structure of reading instruction without branching or connections. Her belief in student-centered reading instruction diminished, especially in the area of natural language. This was contrary to reading instruction.

In the judgment of the researcher, Subject A's first interim conceptualization of reading instruction was the beginning of an entirely new organization without focus showing experimentation and confusion. Her second interim conceptualization of reading instruction was an organization focused on the necessity of a direct instructional process of reading instruction with its many components. This appeared to be the time of her greatest change.

c. What was the extent of conceptual change at

the termination of instruction?

Subject A's terminal conceptualization of reading instruction was a very structured and organized step-by-step approach to the reading instructional process with only a rigid cognitive concern for the student. There is evidence to indicate that her greatest change of conceptualization did not occur at the end of instruction. Subject A's true extent of conceptual change is questionable.

2. What factors influence and inhibit conceptual change?

Subject A said educational psychology class and reading instruction influenced her thinking the most. Working with students in the field was also an added positive dimension for her.

Subject A felt her increased knowledge of reading instruction was inhibited due to not enough student demonstrations in reading methods class. During one of the debriefing sessions she commented that she thought it was hard because there had not been a demonstration. The researcher suggested that she review her notes from class. She said,

> I wrote it down but it was still really hard. I thought it was hard for me not to have something to look at or to remember it by.

> Subject A also thought her progress was impeded because she did not receive the same information to clarify confusions. She attempted to go to more than one person to get answers -- a field instructor and a reading instructor. She would get varying answers, not conceptually different, but not specifically alike word for word. Subject A's personal intensity for getting "the answer" rather than conceptualization appeared to impede her development.

Summary

This appendix presented the data gathered in this study for Subject A. The primary data source was the set of Subject A's semantic maps of reading instruction. The secondary data sources included: (1) Proposition Inventory (September and March), (2) reading debriefing sessions, and (3) reading definitions for reading and reading instruction (November and March). The data were reported in three phases: (1) pre-instructional, (2) instructional, and (3) post instructional. The data were analyzed according to the three bodies of research reported in Chapter II to answer the research questions posed in this study.

In essence, Subject A's preconceptualization of reading instruction and her subsequent conceptual change was investigated during this reading study.

APPENDIX B

SUBJECT B

Introduction

Subject B's data are reported in three phases. First, data from her first semantic map and Proposition Inventory comprise the pre-instructional phase. Second, the instructional phase includes data from her second and third semantic maps, debriefing sessions, and two sets of written reading definitions. This phase is reported in three segments for greater clarity. Third, the post instructional phase contains data from her last semantic map and the second Proposition Inventory. The data are related to the instruction taking place during the study and to the reading teacher educator's semantic map and Proposition Inventory. At each phase the data are analyzed by the criteria specified in Chapter III. Interpretation of the data is made of Subject B's conceptualization of reading instruction according to the class and property relationships on a semantic map (Johnson and Pearson), the learner's interaction with the environment (Floden and Feiman) and expert-novice studies (DeGroot). The data from the three phases are summarized and discussed in terms of the research questions.

Pre-instructional Phase

During the instructional phase Subject B constructed a semantic map and took the Proposition Inventory.

Semantic Map. Subject B's semantic map of reading instruction (see Figure B 1) was a hierarchical listing of general educational terms such as "education," "school," "classroom," and then other definers were grouped in five categories. The categories were: (1) what the teacher could look at to see if the student is learning -- definers were "success," "effectiveness," "skill," "fluency," and "readability;" (2) what they learn -- definers were "learning," "concept," "content," and "context;" (3) how the student learns -- definers were "practice," "apply," "comprehension," and "activity;" (4) what the teacher uses to teach -- definers were "vocabulary," "language arts," "phonics," "sight words," "content area text," and "basal text," (this was the only category connected to the hierarchical listing--the connection was from "task" to "prior knowledge" to "teaching"); (5) methods the teacher uses -- definers were "free reading," "seat work," "direct instruction," "instruct," "explain," and "monitor."

Two definers were eliminated -- "professional" and "word analysis." Subject B added the definer of "student" near the top of her hierarchical listing of general education definers. During the discussion of the map she recited the categories and 18 definers but she did not

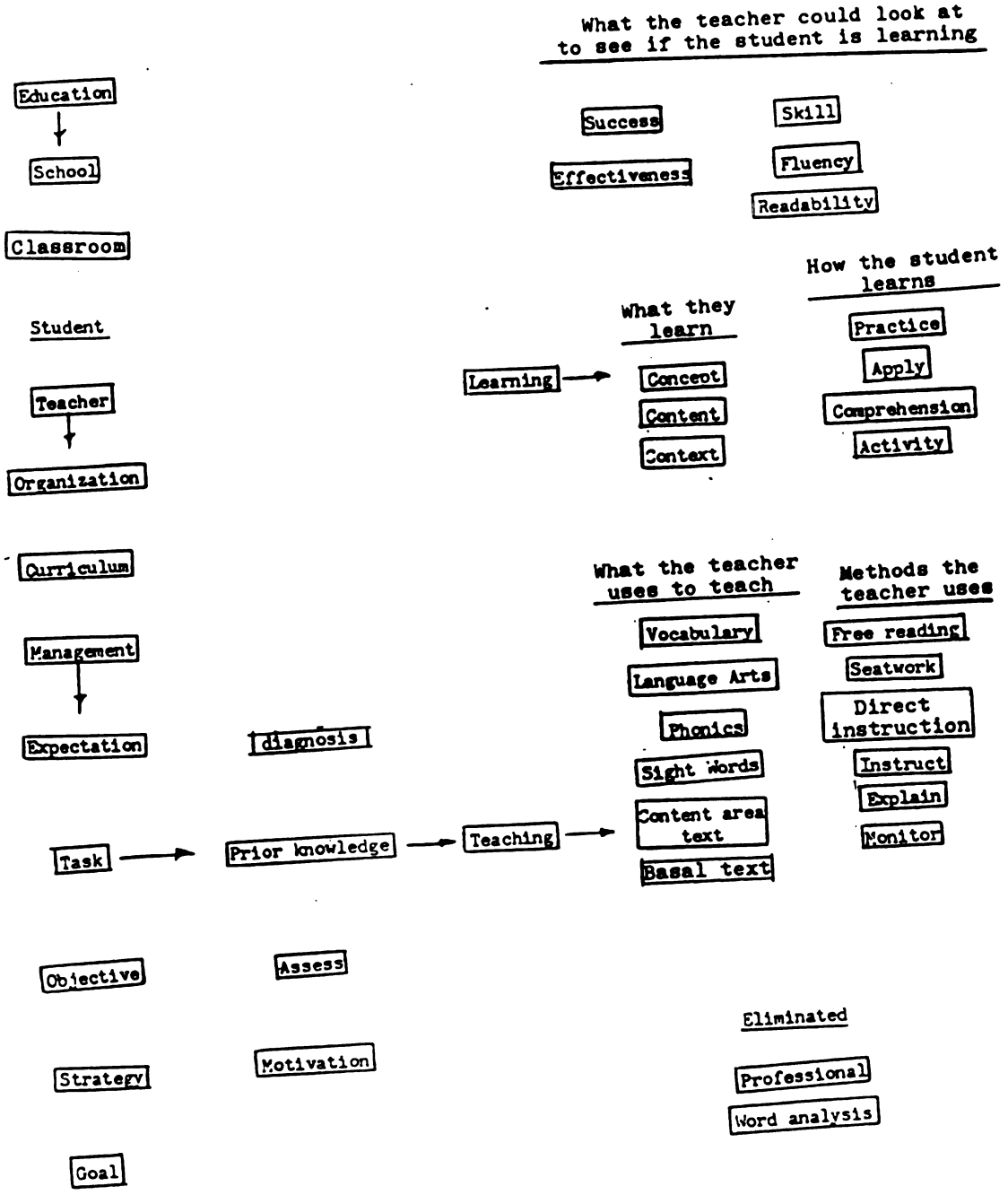


Figure B1 Subject B-September Semantic Map

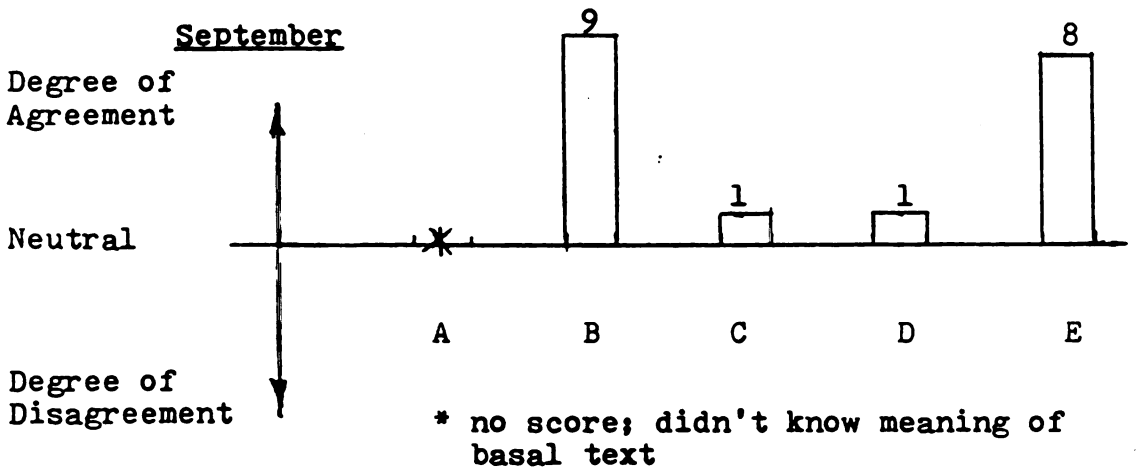
explain them. The discussion contained fragmented sentences such as "I would think...," "I wonder...," a (long pause) "it is not exactly...," "very hard for me to to."

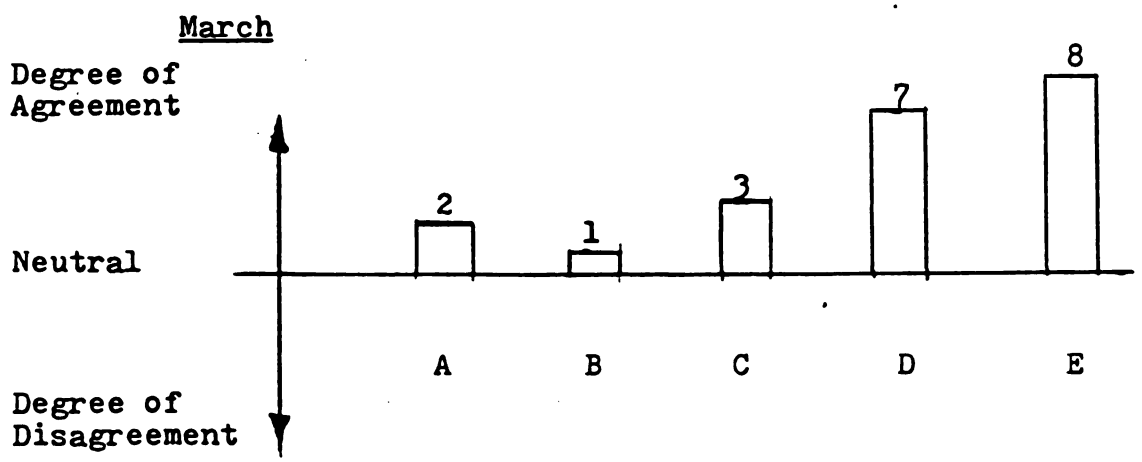
Thus, according to the criteria for analyzing the semantic maps, Subject B's map was hierarchical and grouped in nature. The discussion was an oral listing of about one-third of the definers from her map. Subject B's map was similar to the reading teacher educator's only that both noted some of the same general education definers in a hierarchy.

Proposition Inventory. On Subject B's first Proposition Inventory in September (see Table B 1) she did not rate her beliefs of the basal text. She indicated she did not know what a basal text was. She held her strongest belief in the category of linear skills. She agreed with all nine statements (net score +9) concerning linear skills such as, "I believe the teachers should directly teach the basic skills of reading to those pupils who need them."

The areas of interest and natural language had almost neutral ratings of +2 and +1. She agreed with statements like, "I believe that contextual clues are the most important word recognition aids and should receive more instructional emphasis than sight words or phonics." She disagreed with statements like, "I believe that the teacher's role is to emphasize the communication aspects

Table B1 Subject B Proposition Inventories





Content Centered	Student Centered
A - Basal Text	C - Interest
B - Linear Skills (Content)	D - Natural Language
	E - Integrated Whole

of reading more than the skills."

In the category of the integrated whole (net score +8) her belief was almost equal to linear skills (net score +9). She showed general agreement in all but one of the nine statements concerning the integrated whole. She agreed with statements like, "I believe that the goal of developing comprehension is best achieved by giving pupils realistic reading problems which they see as meaningful in their lives." Thus, her September Proposition Inventory showed that Subject B held her strongest belief in linear skills and the integrated whole of reading instruction.

Summary. Subject B's data gathered on her map in the pre-instructional phase exhibited evidence of knowledge of categories included in reading instruction. Subject B did not explain the definers or discuss relationships. On the Proposition Inventory, a secondary source, the two areas of strong belief (linear skills and integrated whole) could be seen as a contradiction and/or confusing concept.

Interpretation. Subject B's pre-instructional conceptualization of reading instruction was an organized knowledge of the general education classes with the teacher in close interaction with the environment. Classes were unrelated to five groups of reading instructional properties. On a novice-expert (low to high knowledge) continuum, she appeared to possess a low knowledge of

reading instruction. Thus, in the judgment of the researcher Subject B's preconceptualization of reading instruction was a loosely structured but organized knowledge of significant reading instructional categories emphasizing mutual student and teacher roles.

Instructional Phase - Segment One

In the first eight weeks of instruction (Segment One) Subject B attended reading methods and educational psychology classes, took part in debriefing sessions after implementing reading lessons with her tutees, wrote definitions of reading and reading instruction, and constructed a second semantic map at the end of the segment.

Debriefing Sessions. During debriefing sessions in Segment One Subject B exhibited understanding of major concepts emphasized in reading instruction. For instance, she exhibited that she conceptually knew the difference between teaching for contextual meaning and teaching for sight word recognition, two important concepts taught in reading. She also showed concern for her tutee's attitude about reading by making sure her student liked the books she chose for him. The affective aspect of reading instruction was one of the reading outcomes taught in reading methods class.

In one debriefing session the researcher discussed with Subject B the need to make a stronger connection between her lesson and her concern about the affective outcome of her student's reading. Subject B divided the

substance of what she was teaching in one part of the lesson and then concentrated on her student's enjoyment of reading in the other. The researcher suggested that she should attempt to connect the two. Subject B's next lesson implementation reflected this when she said,

> You used our secret to figure it out (the word). Do you know that worked for you. It will work when reading in your USSR book (free reading) too and when you are reading and having fun? Now I want you to do this one by yourself and I want you to tell me what you are doing as you are doing it, okay? I want you to figure it out.

Thus, Subject B exhibited in reading debriefing sessions that she incorporated instruction.

Reading Definition. In this segment Subject B wrote a set of reading definitions. She defined reading as:

> Reading is meaning-getting, whether it is a schoolbook, or any other material a person may choose -- magazines, newspapers, street signs, comics. Reading is communication, looking at a message and getting meaning from it.

This definition contains two major points with examples from reading methods class -- reading involves meaning-getting and is communication.

Her definition for reading instruction was as follows:

> Reading instruction is helping people gain strategies to help them extract meaning from words. It is guiding people and showing them how to use the strategies to read.

This definition reflects two other aspects without elaboration of instructional emphasis -- the teaching of strategies and the guidance to independently use the strategies.

Semantic Map. Subject B's second semantic map changed (see Figure B 2) from being hierarchical and grouped to horizontally connected and branched. The hierarchical placed general education terms on her first map were now connected and branched. She explained that the top of this structure had come from her educational psychology instruction. The middle of the structure became very branched. She explained how educational psychology and reading blended together at this point. She named the middle of her structure "The Teacher Needs To..." and was branched into six segments. Six main definers came from this: "diagnosis," "instruct," "practice," "assess," "monitor," and "motivation." This was the area where she conceived an integration between educational psychology and reading class. From the definer "instruct," she branched two categories of "strategy" and "explain." Strategy included "context," "word analysis," "phonics," and "sight words." "Explain" included other definers like "direct instruction," "indirect instruction," and "vocabulary." Two unconnected sections of her map were called "the teacher will be" and "the student will be" with both resulting in "learning." The application and enjoyment of reading in the real world was the overall encompassing message she emphasized on her map. She used all but three definers that had been introduced in class during Segment One. These definers were "content," "concept," and "activity." In her discussion of the map she verbalized

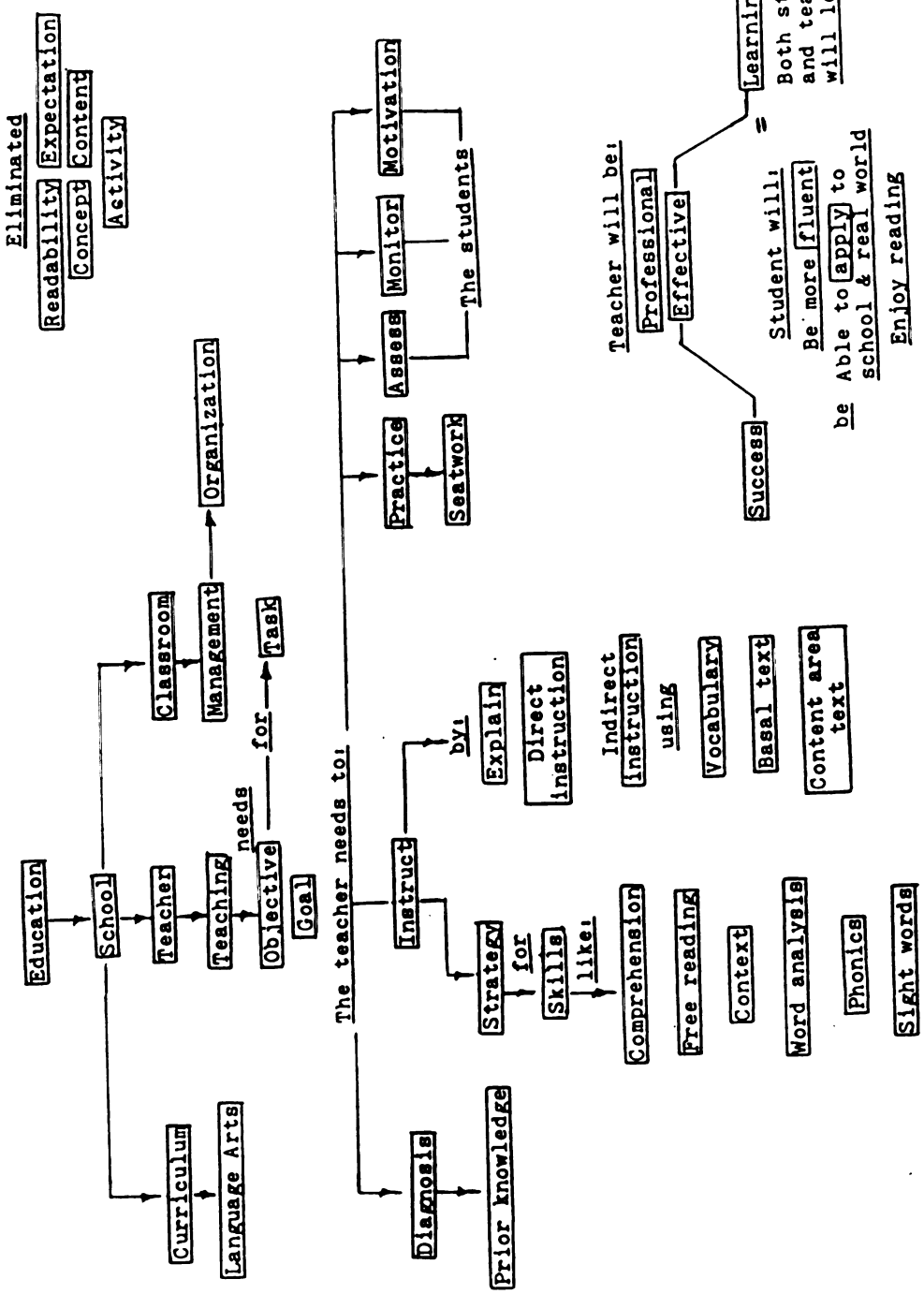


Figure B2 Subject B-November Semantic Map

all of the definers. Although most definers were mentioned in a listing form, there were connectors like "another part is" and "the teacher needs to."

The researcher asked her to compare her first and second maps:

Subject B: I think it is probably very different.

Researcher: Why?

Subject B: Because my idea of reading was a lot different.

Researcher: Why?

Subject B: I did not know what sight words were. I knew what phonics were but not where they fit in. I do not think I knew what word analysis was or objective and goal. I did not have any idea what those were.

Researcher: Where did you learn them?

Subject B: Through educational psychology and reading both. Through working with my focus student (tutee) and by making up my own lessons.

The horizontally connected and branched shape of her second map and the reading teacher educator's were quite similar in shape. The definers were grouped differently. A major difference involved Subject B's incorporation of management and organization in the beginning general education hierarchical order. The reading teacher educator included these concepts nearer to definers associated

more closely to reading. Two other major similarities were the definers that each had located under "strategy" on their maps and the area including the definers "practice," "assess," "seatwork," "monitor."

Summary. Subject B's map had changed from hierarchical and grouped in nature to horizontally connected and branched. She included most of the definers on her map that had been introduced in reading instruction and from educational psychology. She also included more of the definers now in her verbal discussion. Thus, incorporation of instruction and conceptual change had occurred. The debriefing sessions and the reading definitions, secondary data sources, added corroborating evidence of this too.

Interpretation. After eight weeks of instruction Subject B's conceptualization was an organized and related knowledge of general education classes and reading instruction properties. Her conceptualization continued to include an active involvement with the environment (student). On a novice-expert (low to high knowledge) continuum she appeared to possess a moderate knowledge of reading instruction. Thus, in the judgment of the researcher Subject B's first interim conceptualization of reading instruction was organized and structured with a strong emphasis for the professionalism of the teacher and the interactive process between the student and teacher.

Instructional Phase - Segment Two

In the next six weeks of instruction (Segment Two) Subject B continued to participate in reading methods class, ended the educational psychology class and began the classroom organization and management class, continued to take part in debriefing sessions after implementing reading lessons with a reading group, and constructed a third semantic map at the end of the segment.

Debriefing Sessions. During one debriefing session Subject B displayed evidence of incorporating a major instructional theme in reading methods of not allowing the lesson to become answer-driven. The researcher asked, "While you were teaching this lesson, what were you thinking of?" Her response was, "I was thinking of listening to the kind of answers they (the students) were giving me...I knew they needed a little bit longer just from what they were saying to me." By not being "answer-driven" she was willing to spend time in reteaching instead of pushing on to get the correct answers when there was evidence of student misunderstanding.

Semantic Map. At the end of the segment Subject B constructed a third map (see Figure B 3). Like her second map, it was horizontally connected and branched. In her discussion the definers were not merely listed as before. The discussion was in sentence structure, had sequence, and the definers were put into context. A listener could make sense from the discussion without seeing

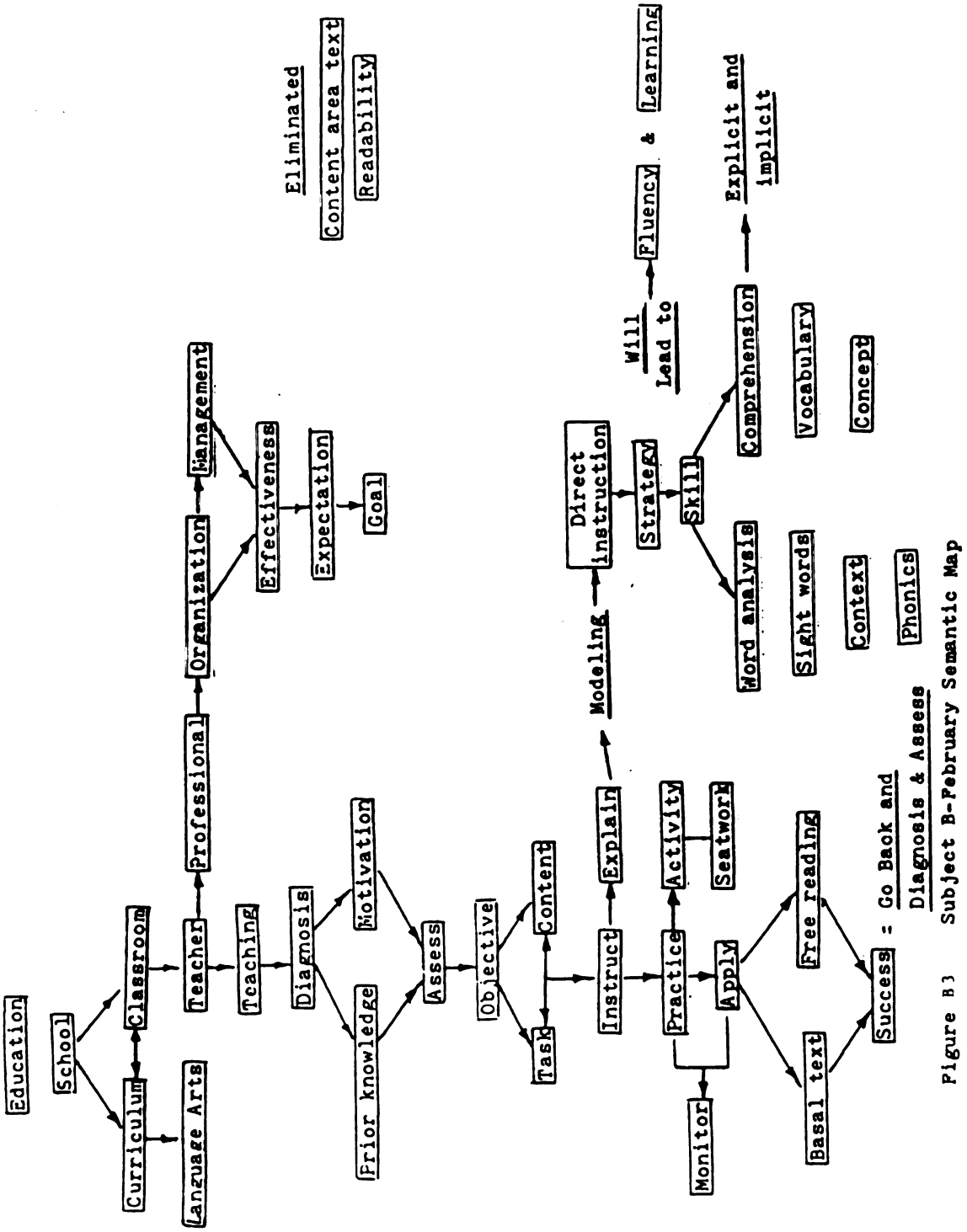


Figure B3 Subject B-February Semantic Map

the map. This map began the same as her second one with general education terms at the top. She eliminated two definers, "content area text" and "readability." Neither had been introduced in reading class. There were more connections among the definers to produce a more cohesive map. For example, the previous branch of "practice," "assess," "monitor," and "motivation" was now integrated with "instruction," "diagnosis," and "prior knowledge" which also came under the main part of the map. Several definers like "modeling," "implicit," and "explicit" (comprehension) were added. These reflected her reading methods instruction. She did make a provision to go back to "diagnosis" and "assess" if instruction had not been successful.

In comparing this map with the other two she said:

> The first time I did this (September) I did not have a clue. The second time I had some idea from educational psychology like objective but now it is starting to fall into place. I did not have any idea of what management was until this term and how it fit into this. Especially, the reading started falling into place. Now I know where comprehension is going and the objectives and all the decisions you make about instruction, practice, and applying... that is where I am.

Summary. During the second segment of instruction Subject B exhibited evidence of continued conceptual change. The same key similarities and differences between the reading teacher educator and Subject B continued in this map. In the discussion the definers were put into a more contextual setting. The eliminated definers had not been

introduced in reading methods class. Subject B showed evidence during the debriefing sessions that she understood the major areas of emphasis. Thus, at this interim point incorporation of instruction and conceptual change continued to occur.

Interpretation. After fourteen weeks of instruction Subject B's conceptualization of reading instruction was again an organized and related knowledge of the general education classes with some integration of the reading instruction properties. The teacher's active involvement with the environment (student) was not emphasized at this time. On a novice-expert (low to high knowledge) continuum, Subject B continued to possess a moderate knowledge of reading instruction. Thus, in the judgment of the researcher Subject B's second interim conceptualization of reading instruction was an organized and structured knowledge emphasizing the need for direct instruction and the continuative quality of instruction.

Instructional Phase - Segment Three

In the last instructional phase (Segment Three) Subject B continued to participate in reading methods class, the classroom organization and management class, and the debriefing sessions. She also wrote the reading definitions again.

Debriefing Sessions. In a debriefing session after she constructed her third map she illustrated her cohesive and connected conceptualization when she talked about

her planning for the lesson. She said,

> I think I planned it very very hard because I was trying to pull all different stuff together. It was not just like I sat down with just one thing and try to plan this, you...I was trying to figure out, well, here's what I am supposed to be doing as far as reading goes and I need to plan my objectives and they fit in with this but it's not anything I'm going to get right straight from reading. I mean there is no easy way to sit down and do this any more. You have to start using other things (i.e., educational psychology) to help you.

In another debriefing session she illustrated her incorporation of instruction that stressed the use of student prior knowledge by saying,

> I have learned more about taking my time, making sure that I involve their (students) experiences rather than just saying, well, here are these words and you know I am going to tell you what they are. Here is what they mean and here is how they fit in the story. It is what can you bring to them. It is just that there is more to it than just throwing a bunch of words to the kids. Then it just does not make much sense, you know, so what? The word "muffin," big deal, so I have learned a lot.

Thus, her debriefing sessions provided evidence of her incorporation of instruction.

Reading Definition. During this segment she wrote a second set of reading definitions.

Subject B's definition for reading was as follows:

> Reading is a complex process where a person uses skills to get meaning from an author's message, whether that message is a trade book, a textbook, a street sign, or a cereal box. Reading is getting information from a message and interacting this information with information in the reader's prior experience background.

This definition contained four major points with examples from reading methods class. Reading: (1) is

complex, (2) involves meaning-getting, (3) has a communicative function, and (4) interacts with reader's prior knowledge.

Her reading instruction definition was the following statement:

> Reading instruction is teaching skills for word identification and comprehension. It is modeling strategies for skills like context, visual discrimination of letters and words, phonics, implicit and explicit comprehension cues. Reading instruction is being aware of the experience backgrounds children need to understand that they are reading. If the children's backgrounds are not full, a teacher needs to fill the gaps. The teacher needs to explain new vocabulary and concepts before the children form a positive attitude by modeling how enjoyable reading can be through indirect instruction like USSR and language and reading fun projects.

This definition contained four major points from reading methods class with additional elaboration. Reading instruction: (1) is teaching skills, (2) is modeling strategies, (3) is expanding upon prior knowledge, and (4) is forming a positive attitude.

Summary. During the third instructional phase Subject B continued to exhibit evidence of incorporation of instruction and conceptual integration in her debriefing session and in her written reading definitions.

Post Instructional Phase

In March after twenty weeks of reading methods instruction Subject B took the Proposition Inventory again and constructed a fourth semantic map.

Proposition Inventory. Subject B's Proposition Inventory (see Table B1, p.181) was rated with almost

neutrality of belief in the two content-centered areas -- basal text and linear skills (net scores +2, +1). She showed agreement in basal skill statements like, "I believe that basal textbook materials are an important part of good instructional programs in reading." However, she disagreed with statements such as, "I believe that comprehension should be taught by asking questions about the basal text story being read." Her linear skill statements were balanced between half in agreement and half in disagreement, which produced an almost neutral score. She rated two of the three student-centered areas as highly agreeable -- natural language and integrated whole (net scores +7 and +8). The third area, interest, was rated as agreeable (net score +3).

There were two basic differences between her September and March inventories. First, she rated the basal text area the second time. The rating for that area was a net score of +2. She summarized her feeling in the following manner:

> Well, it (teacher's guide) does not say to introduce the words before you do the story. It said to do those while you were reading the story and talking about the paragraphs. I did not think that with those kids it was right. That is not what we have been taught but it is just I do not see why -- how it would be helpful to do it (introduce vocabulary) after they have already read it. I would think that it would be more helpful for them to know what the words mean and to have some idea before they read the story.

Second, there was a shift in scores between the linear skills and natural language area. Linear skills

were strong (+0) and natural language was about neutral (+1) in the first inventory. Linear skills now became almost neutral (+1) and natural language became strong (+7).

This indicated that the initial linear skill/integrated whole contradiction was resolved and incorporation of instruction had occurred. The net ratings of the five areas now were very similar to the reading teacher educator's.

Semantic Map. Subject B began to construct her final map (see Figure B 4) in a horizontal manner. After working for awhile she decided to change it to a vertical position. She used all but two definers ("content area text" and "activity") and added seven of her own ("student," "evaluate," "model," "guided practice," "USSR," "declarative," "indirect instruction"). The general educational terms again were arranged hierarchically near the top. Near the middle were the definers "goal" and "objective" and then "teaching" with "diagnosis" under that. From there she divided up "teaching" into "direct" and "indirect instruction." Under "indirect instruction" she discussed the affective aspect as being a desired outcome of reading. Under "direct instruction" she discussed the "strategies" and "comprehension" aspects as taught in reading instruction. She explicitly discussed the "necessity" to "diagnosis" and reteach if the teacher assessed "learning" did not take place.

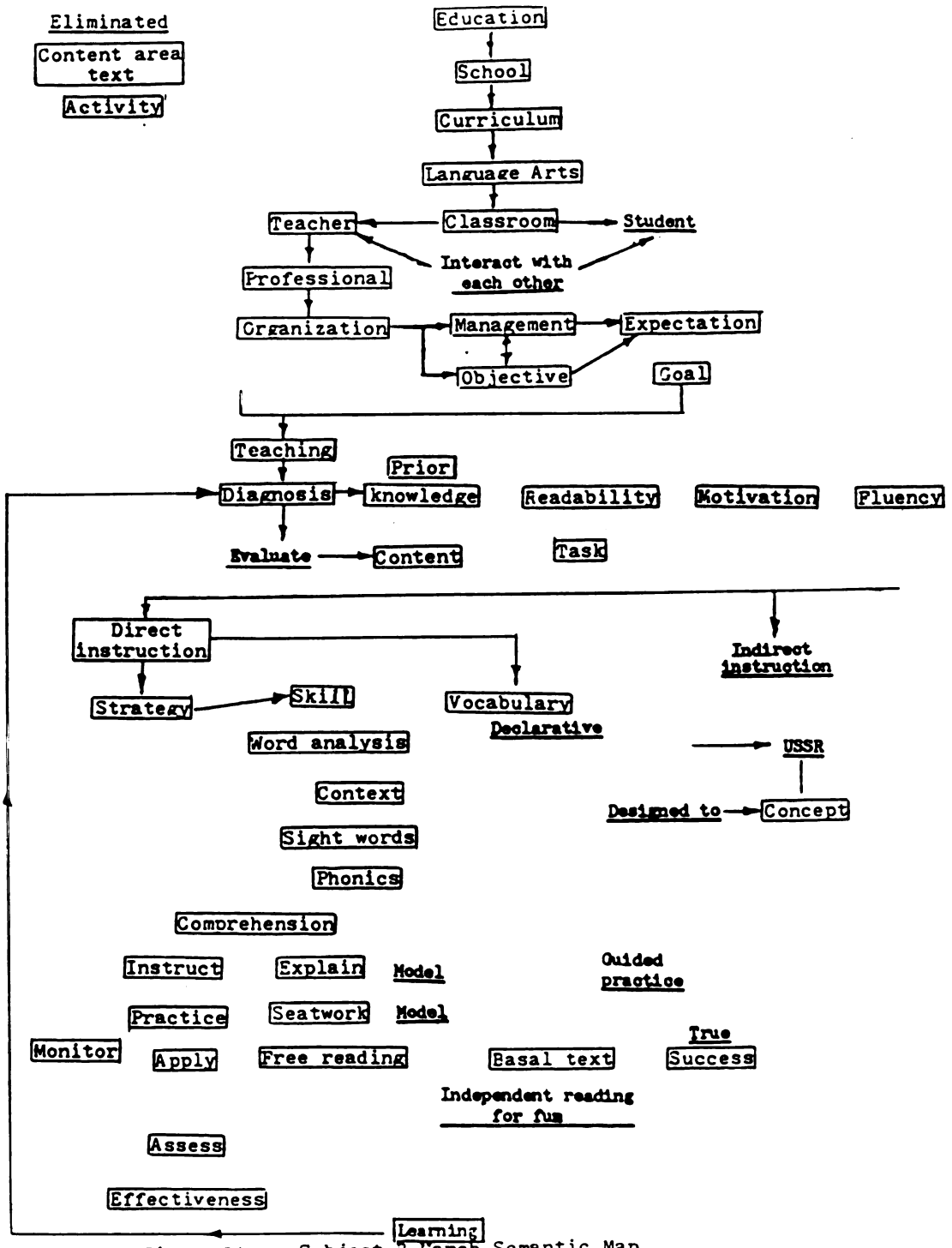


Figure B4 Subject B-March Semantic Map

This map was very difficult for Subject B to construct. She changed positions of the paper once and then needed to add an extension onto the paper. Subject B moved definers around because she saw how they could be in more than one place. A two-dimensional map was not really satisfactory to her. Subject B readily admitted that her third map was much easier than this one.

Thus, Subject B's last map was interrelated and showed evidence of conceptualization beyond class instruction. In her discussion she talked about "putting it all together" and "seeing how the pieces fit" from reading class, other teacher education classes, and working with her students.

Summary. Subject B's post instructional data indicated that incorporation of instruction had occurred because of the change in ratings in the Proposition Inventory. The net ratings had become similar to the reading teacher educator's. Subject B also exhibited a change in conceptualization in the interrelated construction of her map.

Interpretation. After twenty weeks of instruction Subject B's conceptualization of reading instruction continued to reflect an organized and related knowledge of the general education classes. Her conceptualization of the reading instruction properties became less organized but more intensely complex and integrated. The interaction between the teacher and the environment

(student) was completely intertwined. On a novice-expert (low to high knowledge) continuum, Subject B appeared to possess a high knowledge of reading instruction. Thus, in the judgment of the researcher Subject B's terminal conceptualization of reading instruction was a loosely organized, highly complex, integrative and webbed knowledge which emphasized the need for direct instruction, the continuative quality of the instructional process, and teacher student interaction.

Summary of Data

Subject B's data showed evidence of incorporation and conceptualization beyond instruction during twenty weeks of this study. Her four maps along with the discussions increased in conceptual complexity: (1) hierarchical and grouped, (2) horizontally connected and branched, (3) horizontally connected and branched and, (4) interrelated. She expressed her growth in this way:

> The first time I did it (map construction) I was very uncomfortable. I sat there -- it took me a long time to do. It was very hard to do because I did not feel I had anything to build it on. I had no...even...no framework whatsoever to start.
>
> I did not feel that I had the self-confidence to think of myself as a professional person. Now I am starting to feel that I have knowledge. I am not perfect, there is a lot I need to learn but I do know something.

Her March Proposition Inventory indicated that an initial confusion was resolved and became very parallel in the five belief areas with the reading teacher educator's. Both sets of her reading definitions reflected

major points of instructional stress. The second set of definitions also were developed in greater detail and included more instructional significant concepts than the first set. During Subject B's debriefing sessions, she was able to clarify and expand upon her conceptual interpretation of reading instruction. She exhibited no confusions and she was able to communicate her conceptual progress quite explicitly. Thus, Subject B's data showed evidence of conceptual change in reading instruction beyond information presented in instruction.

Summary of Interpretation

Subject B's conceptual development of reading instruction significantly changed and developed into different levels of conceptualization. Although she initially had an organized and related knowledge of the general education classes, the organization became more integrated. Her knowledge of reading instructional properties showed significant growth. The initial five sets of unrelated reading properties developed into a complexly integrated conceptualization stressing direct instruction and the continuative quality of instruction. Some of the structured organization declined as a result of the complexity. She increasingly exhibited interaction with the environment (student). On a novice-expert continuum (low to high knowledge), she initially had low-knowledge, then progressed to moderate-knowledge, and terminated with high-knowledge. Subject B's

conceptualization and change appeared to be progressively growing and developing.

Research Questions

1. How do teacher candidates' understanding of reading instruction change during a reading methods course?
    a. What is the teacher candidate's initial conception of reading instruction?
    Subject B thought of general education as a hierarchical order and reading instruction in small loosely structured unrelated categorized groups emphasizing the student and teacher roles in the instructional process. She strongly believed that linear skills and the integrated whole areas were important in reading instruction.
    b. What is the nature of conceptual change?
    During the duration of this study, Subject B's conceptualization of reading instruction increased in knowledge and structure stressing the direct instruction, the continuative quality of reading instruction,and the interaction between the teacher and student in the instructional process. Her discussion of her maps and debriefing sessions exhibited an increased integrated and reflective conceptualization for problem

solving and self-analysis.

c. What is the extent of conceptual change at the termination of instruction?

At the end of twenty weeks of instruction Subject B's conceptualization appeared to develop beyond reading methods instruction. She had a difficult problem in her fourth map explicitly displaying the intricacies that she understood about reading instruction. She desired to show more integrative interrelationships than could be physically displayed. However, at the end of the map construction she said, "I feel much more self-confident than I did last term" (the first map).

She referred to thinking about lesson planning when she said, "Now I am starting to fit pieces in...," "you just have to sit down and think about how you do it." She also emphasized having the students in mind when planning. At this time the interaction between the teacher and student was completely intertwined.

Thus, Subject B's terminal conceptualization of reading instruction was a loosely-organized, highly-complex, integrative and webbed knowledge which emphasized the need

for direct instruction, the continuative quality of the instructional process, and teacher student interaction.

2. What factors influence and inhibit conceptual change?

When the researcher asked Subject B what accounted for her change she enumerated: the reading methods class, the other assigned readings, talking professionally about these readings with her classmates, the debriefing sessions, the educational psychology class, and the classroom management class. She said, "they all put it all together." The strategy she emphasized that really helped her in teaching was to sit down and think how she learned as an adult. Then she was able to transfer that into planning and implementing her lesson. Her personal habit and ability "to sit down, think about it, and put it all together" appeared to be most influential in her conceptual change. Subject B felt the greatest inhibitor was feeling uncomfortable in her field experience to practice what she had learned in reading instruction. She called it "the frightenness of it" of being around the kids and having a teacher there.

Summary

This appendix presented the data gathered in this study for Subject B. The primary data source was the set of Subject B's semantic maps of reading instruction. The secondary data sources included: (1) Proposition Inventory (September and March), (2) reading debriefing sessions, and (3) reading definitions for reading and reading instruction (November and March). The data were reported in three phases: (1) pre-instructional, (2) instructional, and (3) post instructional. The data were analyzed according to the three bodies of research reported in Chapter II to answer the research questions posed in this study.

In essence, Subject B's preconceptualization of reading instruction and her subsequent conceptual change was investigated during this reading study.

APPENDIX C
SUBJECT C

Introduction

Subject C's data are reported in three phases. First, data from her first semantic map and Proposition Inventory comprise the pre-instructional phase. Second, the instructural phase includes data from her second and third semantic maps, debriefing sessions, and two sets of written reading definitions. The instructional phase is reported in three segments for greater clarity. Third, the post instructional phase contains data from her last semantic map and the second Proposition Inventory. The data are related to the instruction taking place during the study and to the reading teacher educator's semantic map and Proposition Inventory. The data are analyzed at each phase by the criteria specified in Chapter III. Interpretation of the data is made of Subject C's conceptualization of reading instruction according to the class and property relationships on a semantic map (Johnson and Pearson 1978), the learner's interaction with the environment (Floden and Feiman 1981) and expert-novice studies (DeGroot, 1965; Cazden, 1976; Larkin, 1981). The data from the three phases are summarized and

discussed in terms of the research questions.

Pre-instructional Phase

During the pre-instructional phase Subject C constructed a semantic map and took the Proposition Inventory.

Semantic Map. Subject C's first semantic map (see Figure C 1) was a hierarchical listing of all of the definers. She began at the top with the general education definers such as "school," "curriculum," and "teacher," and continued down to the more specific reading instructional definers. There were two branches from the definers "teaching" and "direct instruction." She eliminated the definers "readability," "professional," "seat work," "task," "context," "concept," and "content area text."

In her discussion she did not talk about the general education definers. She began discussing the definers at the very bottom of her map first -- "free reading" and "activity." The discussion was about broad reading topics -- reading groups, use of reading grouping, use of a teacher's aide, and the use of motivation. It did not appear that she attempted to use specific definers as she talked.

Thus, she explained the definer in the context of broad reading topics. Twice in her discussion she mentioned seat work, but the definer was eliminated on her map. She discussed the goal of reading was "for them

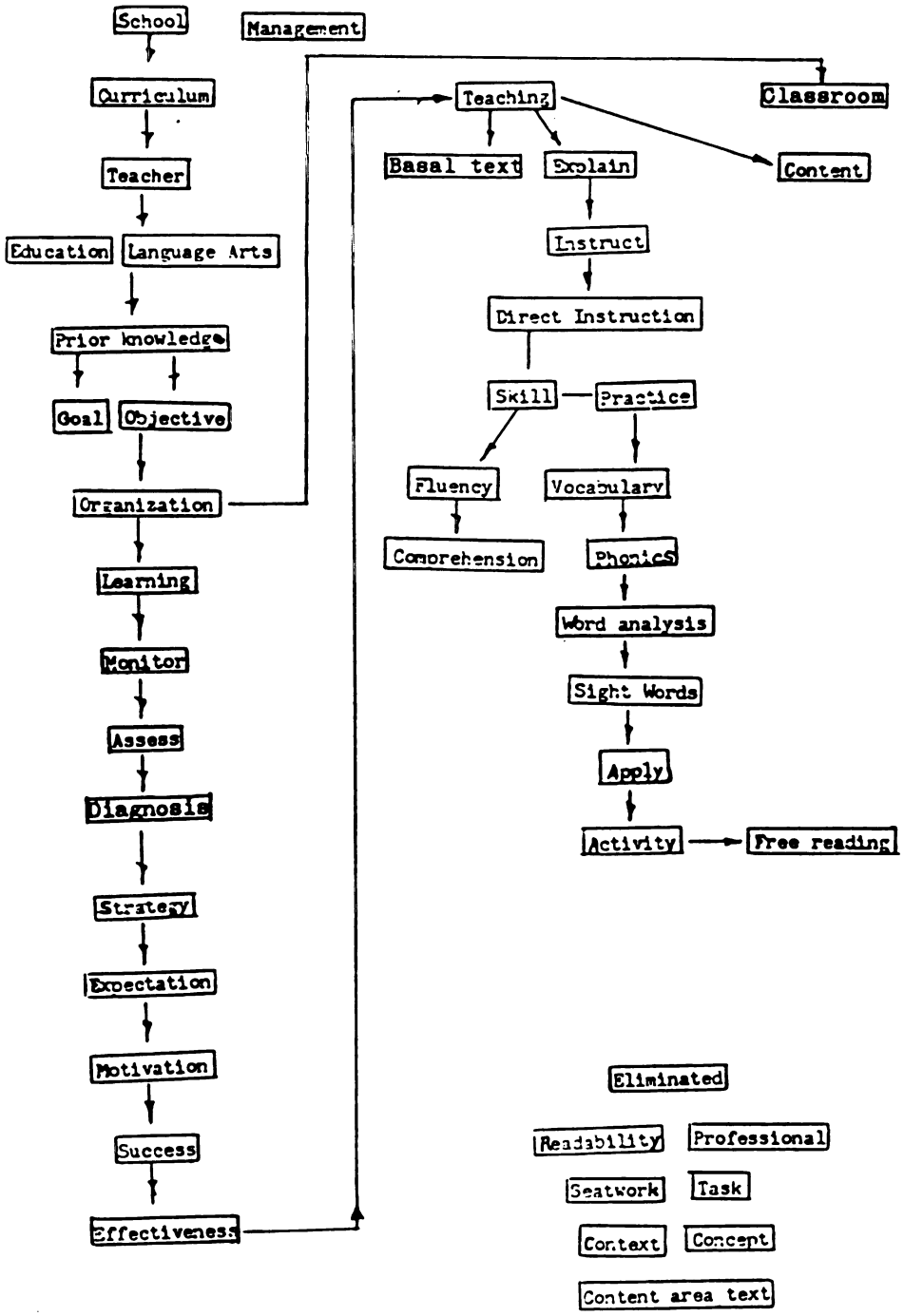


Figure C1 Subject C-September Semantic Map

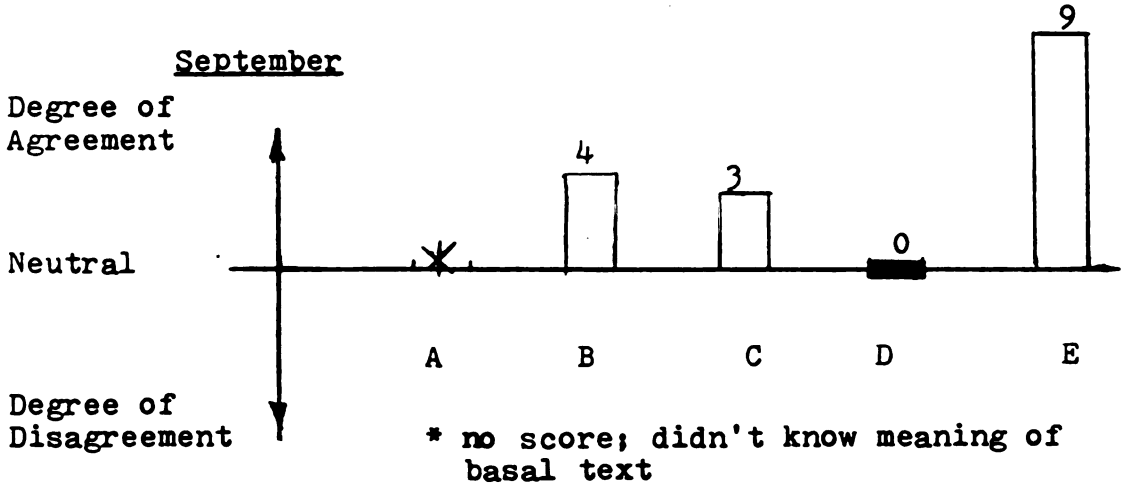
(students) to learn how to read effectively and to have a success in reading and not feel like a failure." She also discussed how she would teach reading. She would "organize her goals and objectives, organize different books, know the classroom, and build an expectation for herself and for the students. This would take management."

To group in reading at the beginning of the year, she said she would, "try to have all students feel comfortable and to listen to them read aloud." In order for her to know the child's level of reading she would diagnose through "using sight words, sounding out vocabulary, and getting to know their vocabulary knowledge." She discussed the use of a teacher's aide to help individual children. She reiterated the importance of organization to get reading instruction started and the importance of "telling the kids and even have them decide on their own goals because if they decide their own goal then they are more apt to reach it."

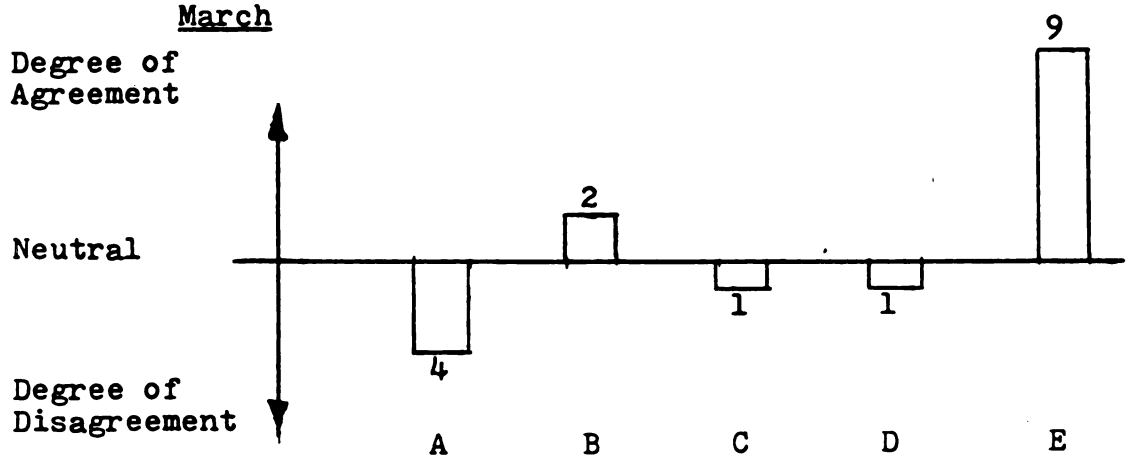
Thus, according to the criteria for analyzing the semantic maps, Subject C's map was hierarchical in nature but her discussion denoted a different, more contextual, conceptualization. She spoke at length about reading grouping, organization, and goals. Her map was not like the reading teacher educator's except that both began with general education definers like "school," "teacher," and "education."

Proposition Inventory. On Subject C's first Proposition Inventory (see Table C 1) in September she did not know the meaning of basal text so this area was not rated. She showed moderate agreement in the linear skills area (net score +4). She agreed with statements like, "I believe the teachers should teach directly the basic skills of reading to those pupils who need them." She also rated the interest area with moderate agreement (net score +3). She rated the nine statements as neutral or with agreement. One neutral statement was, "I believe that we should spend less time teaching pupils how to read and more time in getting him interested in reading." She then agreed with, "I believe that the teacher's role is to help children learn to love to read by allowing frequent free reading and by conducting individual book conferences." In the area of natural language her net score was "0" or neutral. Of the nine items she did not answer three since she did not know the meaning of the terms "meaning cues" and "decoding skills." Other statements she rated as neutral included: "I believe that teachers should spend more instructional reading time on helping children use language as a communication process." Her highest area of agreement (net score +9) was in the integrated whole area. She agreed with eight out of nine statements in the area. She was in strong agreement with, "I believe that the goal of developing comprehension is best achieved by giving pupils realistic reading problems which they can

Table C1 Subject C Proposition Inventories



* no score; didn't know meaning of basal text



Content Centered	Student Centered
A - Basal Text	C - Interest
B - Linear Skills (Content)	D - Natural Language
	E - Integrated Whole

see as meaningful in their lives."

Thus, on her September Proposition Inventory Subject C showed a high degree of agreement in the integrated whole area, moderate agreement in linear skills and interest, and neutrality in natural language. Her highest rating (integrated whole) was in the student-centered component of the inventory.

Summary. Subject C's data gathered in the pre-instructional phase indicates that she could discuss reading instruction in large contextual areas like reading groups, organization, goals, and teacher aides. The physical construction of her map did not indicate this conceptualization. Her high rating in the integrated whole area on the Proposition Inventory corroborates her child-centered stress from her discussion. Her agreement in linear skills and interest also were verified in her discussion. She was undecided how natural language related to reading instruction.

Interpretation. Subject C's pre-instructional conceptualization of reading instruction was an organized knowledge of the general education classes and an unorganized structure with much knowledge of five groups of reading instructional properties. She conceptualized the environment (student) having much interaction, and even a prominent role, with the teacher. On a novice-expert (low to high knowledge) continuum she appeared to possess a low moderate knowledge of reading instruction. Thus,

in the judgment of the researcher Subject C's preconceptualization of reading instruction was unstructured with knowledge of reading organization and management components strongly emphasizing teacher student interaction.

Instructional Phase - Segment One

In the first eight weeks of instruction (Segment One), Subject C attended reading methods and educational psychology classes, took part in debriefing sessions after implementing reading lessons with her tutee, wrote definitions of reading and reading instruction and constructed a second semantic map at the end of the segment.

Debriefing Sessions. Subject C had difficulty implementing her reading lessons in accordance with methods instruction. Her tutee was of Latino origin. She heard Spanish and little English spoken at home. When Subject C wished to teach sight words like "well" and "will," "our" and "are," as taught in reading methods, the tutee had difficulty in learning. The tutee did not realize that each set of configurations were actually different words, that looked differently, that were pronounced differently, and that had two different meanings. She always had pronounced them alike. Subject C became frustrated. During a debriefing session Subject C said, "I was not really prepared with a lot of backup. I had not anticipated that she would not know the different meanings. I did not realize that would be a problem, and I can see now it was."

Even when Subject C retaught the words, she discovered her student did not know the meaning of the word "define." The researcher called this to C's attention. Each lesson Subject C presented brought forth more deficit skills and concepts. This caused her frustration and confusion regarding reading methods instruction. Referring to this confusion, she talked about the demonstration lesson in reading methods for contextual meaning with, "I know that in the lesson a lot of them (elementary students) knew. They (the words being taught) were not things they had never heard of."

By the seventh week of the segment her lessons emphasized Language Experience Activities to relate the child's personal background to reading. She planned word identification strategy lessons teaching her tutee to read the words that she was familiar with at home. Thus, although Subject C experienced frustration and confusion during this time, she successfully overcame the problem using the L.E.A. method.

Reading Definition. Subject C's first definition for reading was: "Reading is meaning-getting." Meaning-getting was one major point of instructional stress from reading methods class.

Her definition for reading instruction was the following statement:

> Reading instruction is very complex. It is super difficult to try to show a child how to figure out words -- it is hard to transport what is in my brain

> (how I read to explain reading to children). Reading instruction has many levels and dimensions. It is an individual thing that should be different for different children with different needs.

This definition included three main points from reading methods: (1) complexity, (2) levels and dimensions, (3) individuality. She felt particularly strong about the complexity of reading because of her difficulties teaching her tutee.

Semantic Map. Subject C completed the first instructional segment with the construction of the November semantic map (see Figure C 2). From a previous hierarchy this map was horizontally branched with connections among the definers. She began the discussion of her map with a statement that explained the beginning of the structure: "That within a school education a professional teacher who shows effectiveness in teaching language arts, promotes learning at a high success rate, and the kids learn." From this statement the remainder of the map was constructed. Two major areas were "teaching" and "strategy and skill." From "strategy" and "skill" was an entire body of definers she said was from reading instruction. From "teaching" she included definers from educational psychology instruction. She eliminated five definers -- all of them had been eliminated from her first map.

The shape of the map was like the reading teacher educator's. Other likenesses of the maps included the definers "organization" and "management" branched from

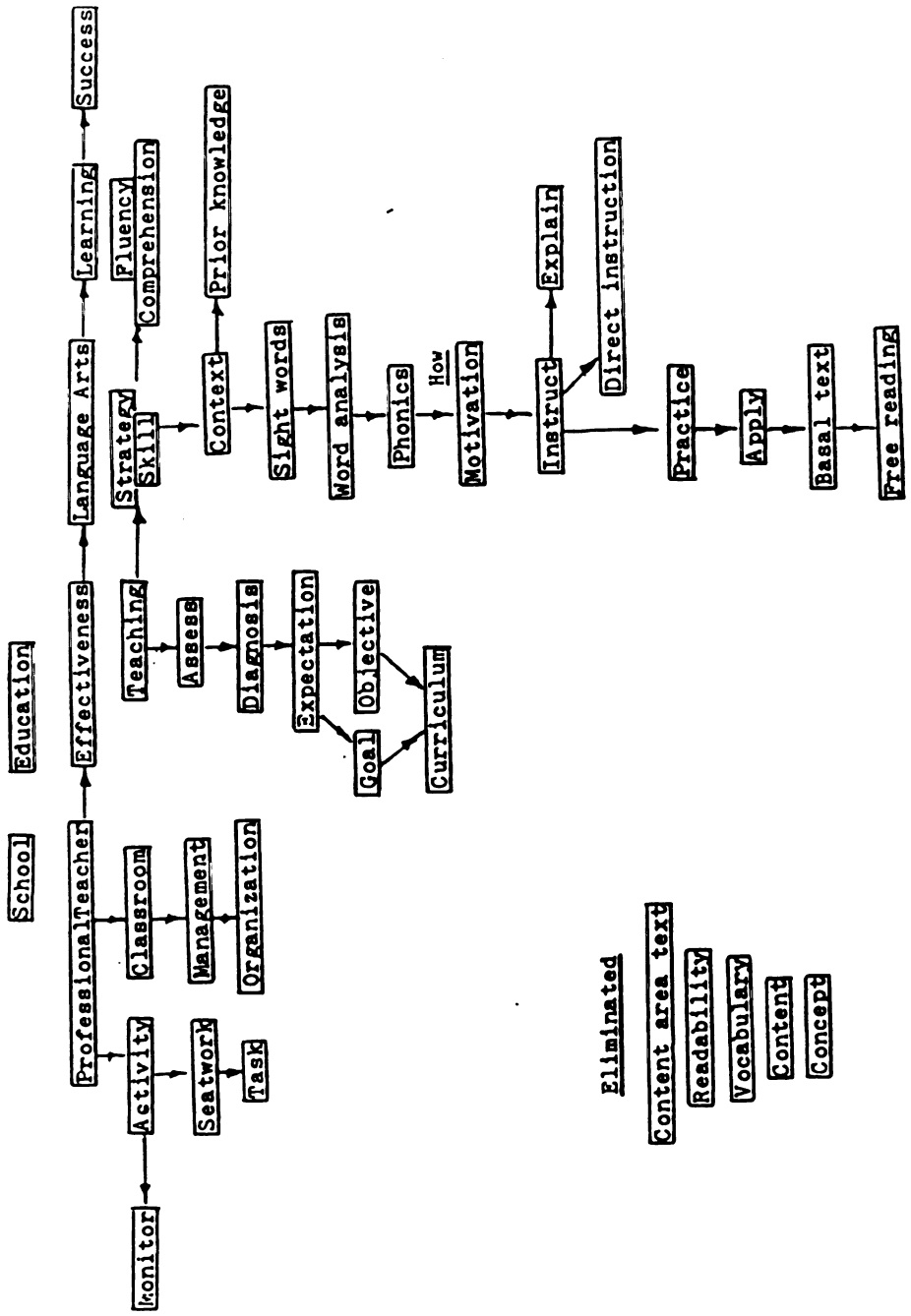


Figure C2 Subject C-November Semantic Map

"teacher," a similar listing of definers under "strategy," and similar areas under "how" on Subject C's map and under "pedagogy" on the reading teacher educator's. Her discussion of the map focused on explaining, not listing, the definers. She did not use the broad areas of discussion as she had done in her first map. She said she knew how "to set up a lesson now."

Summary. During the first segment of instruction Subject C exhibited evidence of incorporation of instruction and conceptual change. Subject C's map had changed from a hierarchical ordering to a horizontally branched and connected structure. This indicated that she had a different conceptualization of reading instruction. She included all but two definers ("content," "concept") that were introduced in instruction. Her map was like the reading teacher educator's in several aspects. Her reading definitions enumerated instructional areas of emphasis. Her debriefing sessions established that she was able to plan lessons which combined the special needs of the tutee and the present content from the reading methods class.

Interpretation. After eight weeks of instruction Subject C's conceptualization of the general education classes continued to be well organized. The framework began to relate and integrate with two groups of reading instructional properties. Her sensitivity to the environment (student) did not appear as great. At this time her

conceptualization seemed concentrated to establish a framework for reading. On a novice-expert (low to high knowledge) continuum, Subject C appeared to have a moderate knowledge of reading instruction. Thus, in the judgment of the researcher Subject C's first interim conceptualization of reading instruction was a tightly structured and well organized knowledge emphasizing teacher planning in the reading instructional process.

Instructional Phase - Segment Two

In the next six weeks of instruction (Segment Two) Subject C continued to participate in reading methods class, ended the educational psychology class and began the classroom organization and management class, continued to take part in debriefing sessions after implementing reading lessons with her tutee and reading group, and constructed a map.

Debriefing Sessions. Subject C shared with the researcher what she felt was a turning point for her as a teacher and her tutee as a learner. The importance of the incident was that the student was able to tell her how (strategically) she would be able to remember the words "window" and "sign."

As Subject C said,

> She (tutee) was thinking strategically about identifying words. I am very pleased with this, after all, we are supposed to be teaching them to be strategic. It feels good to know that she is succeeding. She felt good about it too. I pointed out to her the learning that had taken place and the difference in her from the fall.

This incident provided data to illustrate that Subject C not only conceptually incorporated instruction, but she was able to apply it successfully. She also was able to understand and analyze what had occurred.

Semantic Map. Subject C's February semantic map (see Figure C 3) appeared to be much more segmented and disorganized than her second one. From the physical appearance of the map few definers were connected, branched, or interrelated. But her discussion evidenced organization and cohesion. She used definers that she previously had eliminated like "content area text" and "concepts." She said, "content area text" just had been presented in reading and "concept" had been introduced in educational psychology. As in her first map, she skipped around among the definers when explaining her map.

She verbalized confusion in the area of comprehension (which was the main topic of instruction at that point in reading methods class). This was the area in which most branching was seen. She said,

> I guess I am supposed to know a little bit more about comprehension now, a lot more about comprehension now but I am still kind of fuzzy with how these words are fitting under it. We have been working on that in reading but still...

On this map six definers branched from "comprehension." On the previous map it was listed as a singular skill. This map combined the educational psychology and "how" sections from the previous map. Even though Subject C did not physically show connections, the definers were

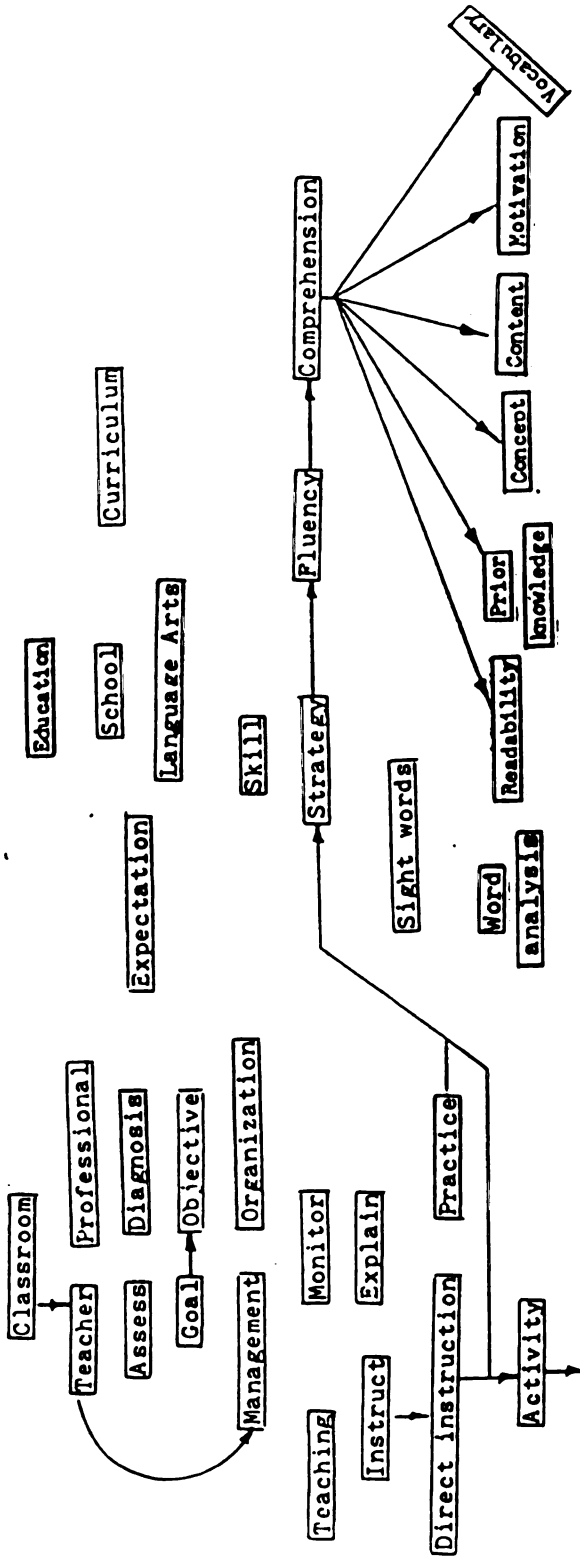


Figure C3 Subject C-February Semantic Map

placed in a way to reveal those connections implicitly. A comparison of this map with the reading teacher educator's indicates that her "strategy" area was similar to his map. His "management" and "pedagogy" area were combined under her general education area. Generally, terms from educational psychology and classroom management were in her general education area. She incorporated them more directly with specific reading definers.

Summary. Subject C exhibited incorporation of instruction by her self-analysis during debriefing sessions. She expressed confusion about "comprehension" during her mapping discussion. Her map did not change in conceptualization, instead she concentrated in the "comprehension" area.

Interpretation. After fourteen weeks of instruction Subject C's entire conceptualization of reading instruction appeared to be unchanged except for one reading instructional property. The conceptualization developed in this reading property. She used the interaction with her environment (student) for her to become self-analytical. On a novice-expert continuum (low to high knowledge) she continued to have a moderate knowledge of reading instruction. Thus, in the judgment of the researcher, Subject C's second interim conceptualization of reading instruction was a less structured and organized knowledge but focused upon the area of the comprehension instructional component.

Instructional Phase - Segment Three

In the last instructional phase (Segment Three) Subject C continued to participate in reading methods class, the classroom organization and management class, and the debriefing sessions. She also wrote the set of reading definitions again.

Debriefing Sessions. During this instructional segment Subject C taught a reading group. The debriefing sessions were concentrated on management. Subject C changed, rearranged, or eliminated parts of her lesson in order to "survive" during the reading lesson. She said, "This makes me so angry because see there is so much I could have done and I just left it out. I want to go back in there and redo it." Near the end of the segment Subject C's management improved and each lesson accomplished more reading instruction. Subject C was self-analytical during these debriefing sessions. For instance, one time she said, "My task description and analysis of how to find the main idea is not very accurate, I do not think." Thus, during this segment Subject C successfully incorporated classroom management instruction and became self-analytical during debriefing sessions.

Reading Definitions. Subject C wrote another set of reading definitions. Her definition for reading was as follows:

> Reading is meaning-getting. The reader must use skills that he has learned in order to decipher the author's message and to gain meaning from it.

This definition included three main instructional points without any details: (1) meaning-getting, (2) knowledge of skills, and (3) communication aspect of author's message.

Her definition of reading instruction was this statement:

> Reading instruction is the teaching of word identification skills, as well as comprehension skills (and fluency skills, although we have not dealt with this facet of instruction) plus modeling and all sorts of other affective things (language experience).

This definition delineated without detail two of the three major outcomes of reading taught in methods class: (1) the process of reading (teaching skills) and (2) the attitudinal (affective) aspect of reading.

Summary. Subject C exhibited incorporation of classroom management instruction and the ability to be self-analytical during debriefing sessions. She included five major instructional emphases in her reading definitions.

Post Instructional Phase

In March after twenty weeks of reading methods instruction Subject C constructed a fourth semantic map and took the Proposition Inventory again.

Semantic Map. Subject C's general organization of her March map (see Figure C 4) was extremely complex. She began discussing her map but she became entangled in

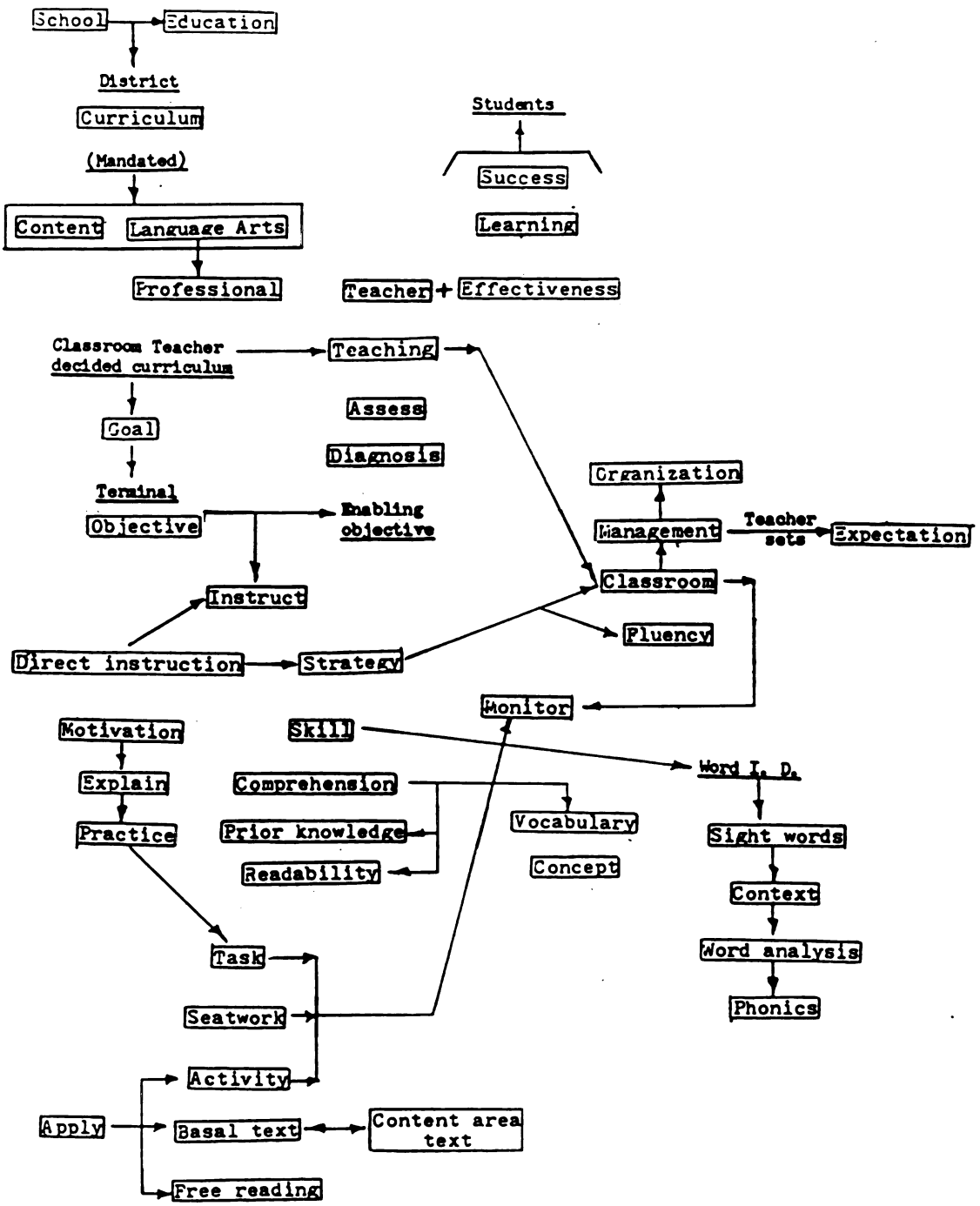


Figure C4 Subject C-March Semantic Map

her confusion between language arts and reading. (At this time language arts had not been explicitly introduced in reading methods class.) She said,

> I guess I am just confused if reading falls underneath language arts. I do not think it really does just from what I picked up and hearing it in class. But I really do not have an exact...I am not sure where to place it on this chart.

After she continued to construct the map again she subdivided the definer "objective" and made two new definers -- "terminal" and "enabling." These terms had been used in educational psychology and in reading. She also divided "curriculum" into "mandated-district curriculum" and "classroom teacher-decided curriculum." Much of the discussion was short sentence fragments with phrases such as, "I think I wanna," "I do not know if I should," "Well, no." There was much hesitation and many pauses. She said that she had a difficult time "organizing it in my mind, trying to make it really clear." The researcher attempted to probe into why she felt there was more of a problem now than before. Subject C's response was,

> I think it was clear in my mind at one time. I do not know if that was really how it was supposed to be or anything but I did think I had a more clear understanding of it when I would be doing this before. Now it seems that they (definers) are all so closely related.

She saw many more connections and interrelationships than she had before. A goal just was not a goal.

Now, there were terminal ones and enabling ones. Curriculum was not just curriculum. Now, there was district-mandated curriculum and teacher-decided curriculum. All of these concepts were introduced earlier in instruction. Subject C began seeing so many interrelationships that she had a great deal of difficulty in the physical construction of this map. She never became satisfied with it.

Proposition Inventory. Subject C rated the Proposition Inventory again (see Table C 1, p.210). She rated the basal text area with a net score of -4. She disagreed with six out of the nine statements. Her strongest disagreement was in the statement, "I believe that the teacher's role in reading is to assign pupils to appropriate basal materials and direct them as they complete the material." She rated the linear skills area with mild agreement (net score +2). One "agreed with" statement was, "I believe that a significant part of a teacher's time should be spent in teaching basic reading skills." The area of interest was rated with a -1. She disagreed or was neutral with six out of the nine statements. A "disagreed with" one was, "I believe that reading is not difficult for most children to learn if they are provided with stimulating and lively materials to read." Natural language also received a -1 rating with six out of nine statements receiving a "disagreed with" or neutral rating. She scored the integrated whole area

with a strong agreement rating of +9. A "strong agreed with" statement was, "I believe that word recognition instruction should not become more important than involving pupils in real life reading tasks."

Subject C rated three areas with similar or the same net scores as the reading teacher educator -- linear skills, interest, and integrated whole. Her rating was -4 in the basal text area and his rating was neutral. She slightly disagreed in natural language (-1) and he agreed (+6) in that area.

Subject C's September and March inventories changed in two ways. First, she rated the basal text statements in March. Second, she rated all areas except integrated whole with more disagreed with scores than she did in September. She had rated eight statements as neutral in September. These were changed to "disagree with" in March. She rated three areas very similarly to the reading teacher educator.

Summary. Subject C's post instructional data showed that she was conceptualizing reading instruction as being so interrelated that it was difficult to construct a physical map. She disagreed with aspects about reading instruction that she felt neutral about in September. She appeared to be "sorting out" her thinking to become more discriminating.

Interpretation. After twenty weeks of instruction Subject C's conceptualization of reading instruction was

a highly related and integrated knowledge of the general education classes and the reading instructional properties. This complexity led to some disorganization. She continued to actively interact with the environment (students). On a novice-expert (low to high knowledge) continuum, Subject C appeared to possess a high knowledge of reading instruction.

Summary of Data

Subject C's data indicated that she experienced conceptual change from the incorporation of reading instruction. Not only did her maps show different conceptualizations, but her discussions of the maps were especially evident of interrelatedness. There were some aspects of her maps similar to the reading teacher educator's. She noted two areas (linear skills and interest) more closely to the reading teacher educator's in March than in September. A third area, integrated whole, was already similar. Subject C included major instructional themes in her sets of reading definitions. Her reading definition increased in the number of major themes given from September to March but her reading instruction one did not. She usually offered no elaboration in the definitions. Thus, Subject C's data exhibited evidence of incorporation of instruction to assist in conceptual change during this study.

Summary Interpretation

Subject C's conceptual development in reading instruction significantly changed and increased in degree of conceptualization. Her initial organized knowledge of general education classes became more integrated into the reading instructional properties. Her knowledge of and structure in the reading instructional properties increased. At the point where her knowledge structure became integrated and complex, organization declined. Her interaction with the environment (student) was continuous and active. On a novice-expert (low to high knowledge) continuum, she initially had low moderate-knowledge, then progressed to moderate-knowledge, and terminated with high-knowledge. Subject C's conceptualization of reading instruction appeared to be growing and developing. Thus, in the judgment of the researcher, Subject C's terminal conceptualization of reading instruction was loosely organized and structured, but was a highly knowledgeable, complex, and integrated web attempting to manage the interaction of all the instructional components stressing the teacher student role.

Research Questions

1. How do teacher candidates' understanding of reading instruction change during a reading methods course?
    a. What is the teacher candidate's initial conception of reading instruction?

Subject C's initial map of reading instruction was in a hierarchical arrangement without branching from very broad definers to specific ones more related to reading. She was able to discuss these definers within broad reading instructional categories. She exhibited a strong belief in the conception of an integrated wholeness of reading instruction although she had a neutral belief in the natural language aspect of reading instruction. Thus, Subject C's preconceptualization of reading instruction was unstructured with knowledge of broad reading components of organization and management which strongly emphasized teacher-student interaction.

b. What is the nature of conceptual change? Subject C's map changed from a hierarchical shape to horizontally branched exhibiting a cohesive and connective structure. Her conceptualization appeared to be a tightly structured and well-organized knowledge emphasizing the plan the teacher needs to use in the reading instructional process. Her conceptualization then became less cohesive with a focus in the area of the comprehension.

c. What is the extent of conceptual change at the termination of instruction?

After twenty weeks of instruction she had difficulty constructing a physical map. Her conceptualization of reading instruction was loosely organized and structured, but a high knowledgeable complex and integrated web which attempted to manage the interaction of multi-instructional components and stress the strong integral role of the teacher.

2. What factors influence and inhibit conceptual change?

Subject C repeatedly referred to her change of thinking because of what she had learned in reading methods, educational psychology, classroom management classes, from her field instruction, and very importantly her experiences in her field assignment. She felt that her field experience had both positive and negative aspects contributing to her change. One negative factor that inhibited her to practice reading instruction was management problems in her reading group. She said,

> Management is so closely related with instruction because if you do not have good management there is no way you can instruct at all. If you do not have control, there is no organization. If the management is off, then instruction will be off.

She felt an additional impediment in practicing and/or continuing conceptual change was when she felt "made" to teach a lesson, a workbook page, or a certain story. At times she felt the particular material was out of order and/or inappropriate at that time. At one point she said, "I never would have taught this poem now." She became quite unhappy and frustrated the more she learned about reading instruction contrasting with what she was told she must teach. But at the same time, she strongly supported the field experience as a positive influence assisting in her change.

Summary

This appendix presented the data gathered in this study for Subject C. The primary data source was the set of Subject C's semantic maps of reading instruction. The secondary data sources included: (1) Proposition Inventory (September and March), (2) reading debriefing sessions, and (3) reading definitions for reading and reading instruction (November and March). The data were reported in three phases: (1) pre-instructional, (2) instructional, and (3) post instructional. The data were analyzed according to the three bodies of research reported in Chapter II to answer the research questions posed in this study.

In essence, Subject C's preconceptualization of reading instruction and her subsequent conceptual change was investigated during this reading study.

APPENDIX D

SUBJECT D

Introduction

Subject D's data are reported in three phases. First, data from her first semantic map and Proposition Inventory comprise the pre-instructional phase. Second, the instructional phase includes data from her second and third semantic maps, debriefing sessions, and two sets of written reading definitions. This phase is reported in three segments for greater clarity. Third, the post instructional phase contains data from her last semantic map and the second Proposition Inventory. The data are related to the instruction taking place during the study and to the reading teacher educator's semantic map and Proposition Inventory. At each phase the data are analyzed by the criteria specified in Chapter III. Interpretation of the data is made of Subject D's conceptualization of reading instruction according to the class and property relationships on a semantic map (Johnson and Pearson, 1978), the learner's interaction with the environment (Floden and Feiman, 1981), and expert-novice studies (DeGroot, 1965; Cazden, 1976; Larkin, 1981). The three phases are summarized and discussed in

terms of the research questions.

Pre-instructional Phase

During the pre-instructional phase Subject D constructed a semantic map and took the Proposition Inventory.

Semantic Map. Subject D's first semantic map in September (see Figure D 1) began with three general educational definers -- "school," "classroom," and "curriculum." She called those the "large things." In the middle were the definers "teacher" and "language arts." "Strategy," "management," "goal," and "objective" were branched from "teacher." She emphasized that the teacher needs to maintain discipline. "Motivation" and "direct instruction" were branched from "language arts." Under "direct instruction" she listed seven definers that she said were part of direct instruction, including the "basal text" and "seat work." In a separate category she included five definers "expectation," "monitor," "assess," "effectiveness," and "apply." When she discussed this group, it in essence became a teacher self-evaluation category. She referred to those definers as the "things the teacher needs to go back and look at how and what she has taught and if it has not been effective." She eliminated 21 definers (almost half) on the map. She asked, "Do I have to try to use more of these (definers)?" When it appeared that she was finished, she said, "I do not know where to put them."

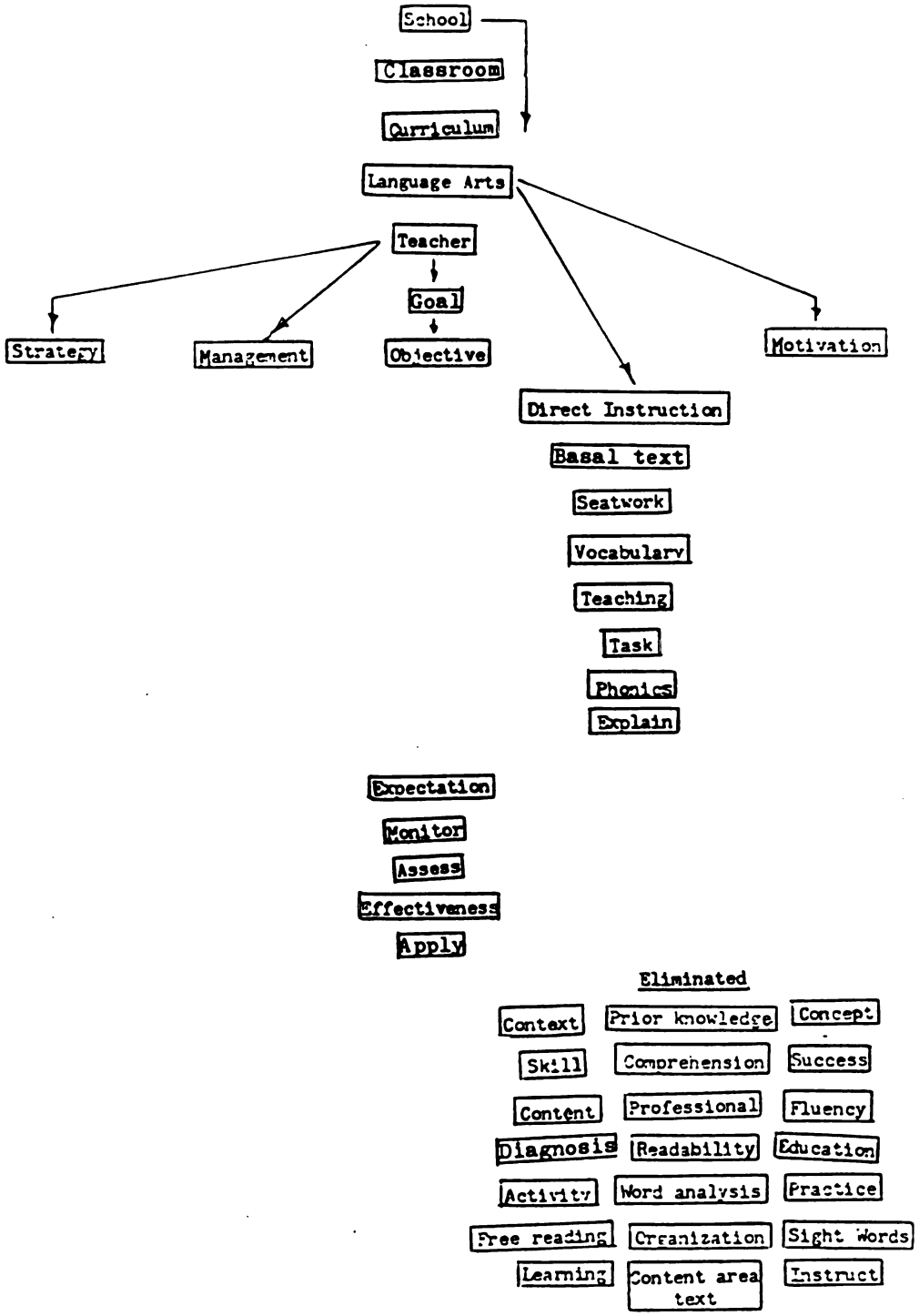


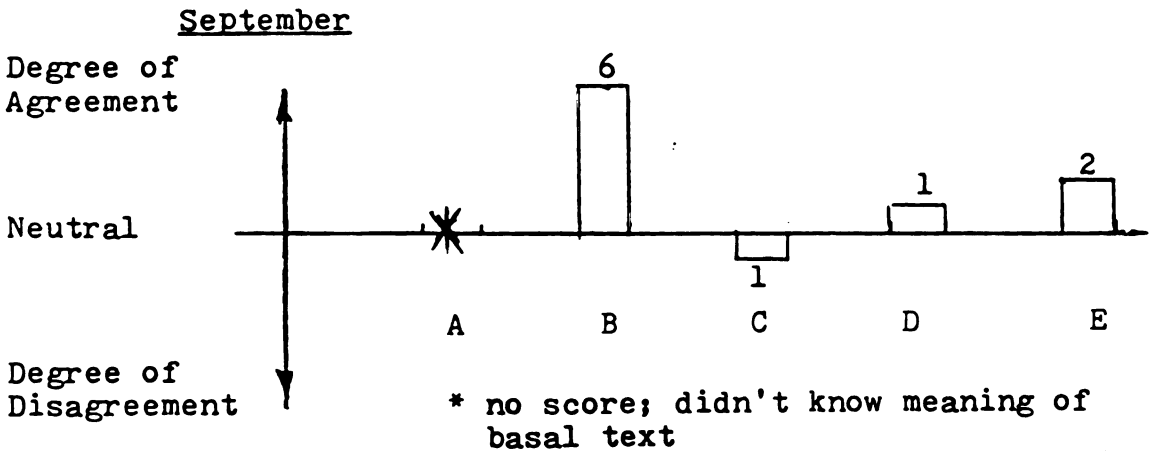
Figure D1 Subject D-September Semantic Map

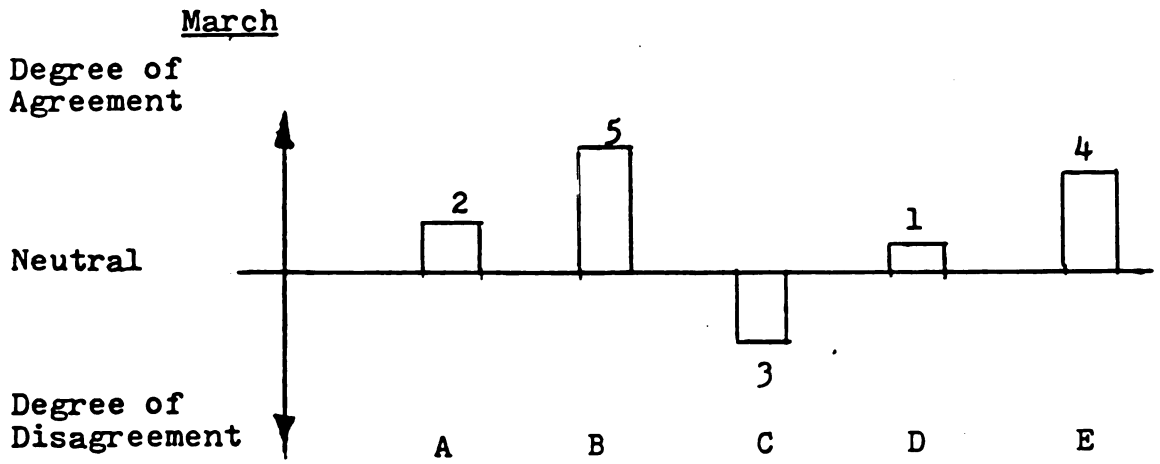
Of the 23 definers which she used on the map, she included 14 in her discussion. She talked about the definers in the beginning general education hierarchy and the teacher self-evaluation group in the context of sentences. Subject D referred to the definers under "direct instruction" as "different areas that the teacher has to work in."

Thus, according to the criteria for analyzing semantic maps, the shape of Subject D's initial map was hierarchical and grouped. She eliminated almost half of the definers. The map was similar to the reading teacher educator's only that both began with a hierarchy of general education definers.

Proposition Inventory. On Subject D's September Proposition Inventory (see Table D 1) she did not rate the basal text area. She indicated that she did not understand the term. Linear skills received a +6 net score. She agreed with six out of the nine statements and rated two others as neutral. She agreed with statements like, "I believe that teachers should directly teach the basic skills of reading to those pupils who need them." Her rating of the interest area statements was -1. Six statements received a neutral rating. One statement she did not rate because she did not understand the term "higher level comprehension process." The natural language area received a net score of +1. She did not answer three of the items because she did not understand the meaning of

Table D1 Subject D Proposition Inventories





Content Centered	Student Centered
A - Basal Text	C - Interest
B - Linear Skills (Content)	D - Natural Language
	E - Integrated Whole

"decoding skills" and "meaning cues." The remainder of the items she either agreed with or rated as neutral. The integrated whole area's net score was +2. She agreed with four statements and rated three as neutral. She agreed with statements such as, "I believe that the teacher's role is to involve pupils in realistic reading tasks which illustrate the functional utility of reading."

Thus, Subject D rated the first Proposition Inventory as being almost neutral in the student-centered components -- interest (-1), natural language (+1), and the integrated whole (+2). She agreed strongly in the content-centered component -- linear skills (+6). In comparison with the reading teacher educator, she rated linear skills higher and natural language and integrated whole lower. The interest area ratings were comparable.

Summary. Subject D's pre-instructional map indicated that she used a limited number of general education and reading instruction definers. She held a stronger belief in the content-centered component of reading than in student-centered component on the Proposition Inventory.

Interpretation. Subject D's pre-instructional conceptualization of reading instruction was a narrow and sparse knowledge of general education classes related to one group of reading instructional properties. The teacher's role was to "impose" upon the environment (student) rather than to interact with it. On a novice-expert (low to high knowledge) continuum, Subject D had a very low

knowledge of reading instruction. Thus, in the judgment of the researcher, Subject D's preconceptualization of reading instruction was a minimal but organized knowledge structure stressing the teacher with a specific directive role in the instructional process of reading.

Instruction Phase - Segment One

In the first eight weeks of instruction (Segment One) Subject D attended reading methods and educational psychology classes, took part in debriefing sessions after implementing reading lessons with her tutee, and constructed a second semantic map at the end of the segment.

Debriefing Sessions. Subject D had difficulty presenting an appropriate balance of new material and providing enough practice when tutoring her student. This balance was a major facet in the reading methods class. During debriefing sessions Subject D made statements regarding her tutee,

> I do not know, I did not know he would have so much trouble. I was a little surprised I guess. I do not know, he never ceases to amaze me I tell you. Because he never gets anything, he does not seem to. I want him to do it really good.

Although she said, "We are going to have to stay with it (referring to her instruction of new material) a little longer," she proceeded to introduce another new strategy during the next lesson.

The researcher discussed with Subject D the problem of presenting too much new material and not providing

enough practice. The researcher also reminded her to get evidence of the student's learning. Subject D exhibited impatience and frustration and a desire to push on with new material. When the researcher told her that her student was unable to verbalize even one out of the three strategies she had introduced to him, Subject D's response was, "I probably should not even kept going. I thought we had it six times. What am I going to have to do for six days? Do it six more times?" Thus, incorporation of a prominent instructional theme was not evidenced in Subject D's debriefing sessions.

Semantic Map. Subject D's November semantic map (see Figure D 2) started out like September's but became more branched and connected. The "teacher" became a focal point with most other definers branching from or connecting with "teacher." She used 27 definers compared with 23 the first time. Subject D now included "sight words," "strategy," "word analysis," and "prior knowledge." All had been emphasized in reading class by this time. Other definers included in reading instruction and in educational psychology such as,"goal," "task," and "monitor" remained excluded from her map. Subject D added definers only from reading methods class. She added closure to this map by more explicitly showing the branching and connection between the areas of "direct instruction," "management," and "motivation." She added the definer "indirect instruction" to this map.

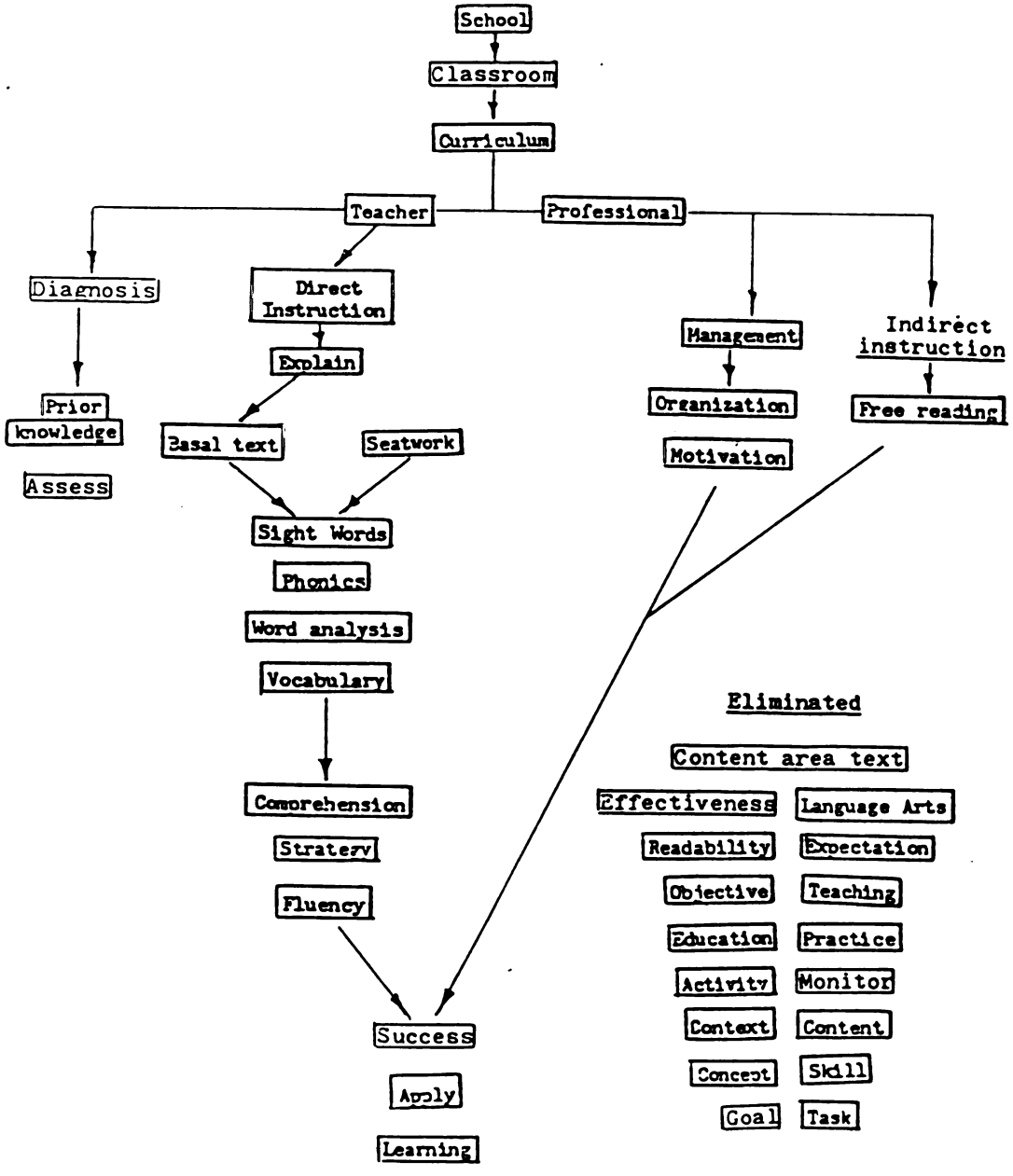


Figure D2 Subject D-November Semantic Map

The discussion for this map was in sentence form with sequential connections such as, "the first thing" and "then after." There was little detail or explanation. Even though her map showed little physical similarity with the reading teacher educator's, it was not inconsistent with instruction.

Summary. During the first instructional phase Subject D's data showed some evidence of conceptual change and incorporation of reading instruction in her map but not in her debriefings. Her map became connected and branched and included more definers. Incorporation of educational psychology instruction was not apparent in Subject D's map.

Interpretation. After eight weeks of instruction Subject D conceptualized an organized but narrow knowledge of general education classes related to both one large and to two small groups of reading properties. The teacher's role continued to be "in charge" of the environment (student). On a novice-expert (low to high knowledge) continuum it appeared that Subject D possessed a moderately low-knowledge of reading instruction. Thus, in the judgment of the researcher, Subject D's first interim conceptualization of reading instruction increased in knowledge but remained very structured and organized with the teacher acting as the director of a specific step-by-step approach to learning through the use of the basal textbook.

Instructional Phase - Segment Two

In the next six weeks of instruction (Segment Two) Subject D continued to participate in reading methods class, ended the educational psychology class, began the classroom organization and management class, and continued to participate in debriefing sessions. After implementing reading lessons with her tutee and with a reading group, Subject D constructed a third semantic map at the end of the segment.

Debriefing Sessions. In this segment the debriefing sessions reflected management difficulties in Subject D's reading group. During a debriefing session the researcher asked Subject D what decisions she had made during her lesson. She said, "I just shortened things. They (students) seem to know them (vocabulary words). They knew them enough to be 'smart alecks' about them." The researcher suggested that perhaps this assessment was not correct. Subject D had introduced the word "pause." A student referred to it with the meaning of "paws." Subject D said, "She is just being a 'smart aleck.' I think that she really knew. She is a smart little kid. I really think she knew."

During the debriefing Subject D referred to the group management with the following remark:

> It makes me a little angry sometimes. I do not have much patience at all. I was doing all of the talking. Part of them were listening and they probably knew it anyway. And the ones who were not listening they could not even care.

Shortly before the end of this segment Subject D began implementing methods presented in classroom management instruction, and group behavior improved. She accomplished more reading instruction during each lesson.

Thus, during the debriefing sessions Subject D did not exhibit incorporation of reading instruction, but she did incorporate classroom management instruction.

Semantic Map. Subject D used three more definers in her February map (see Figure D 3) than in her previous one. Most of the definers were listed or mentioned with little verbalization between them. The connectors between definers were sequential like "first" and "then." As on the other maps, she began this map with "classroom" and "school" near the top. She included the definer "education" for the first time. Instead of having "diagnosis" and "direct instruction" as two branches from "teacher," she incorporated them along with "management" and showed a relationship from "diagnosis" down to "direct instruction." The strategies included in "direct instruction" related to "seat work" and "practice," then "free reading," and finally to the areas she felt were included in "success" -- "learning," "comprehension," and "fluency." She again reiterated, "If you have not been successful then you have to return and start over."

She eliminated the definer "basal text" for the first time. It had been greatly emphasized during this segment in reading instruction. She continued to eliminate

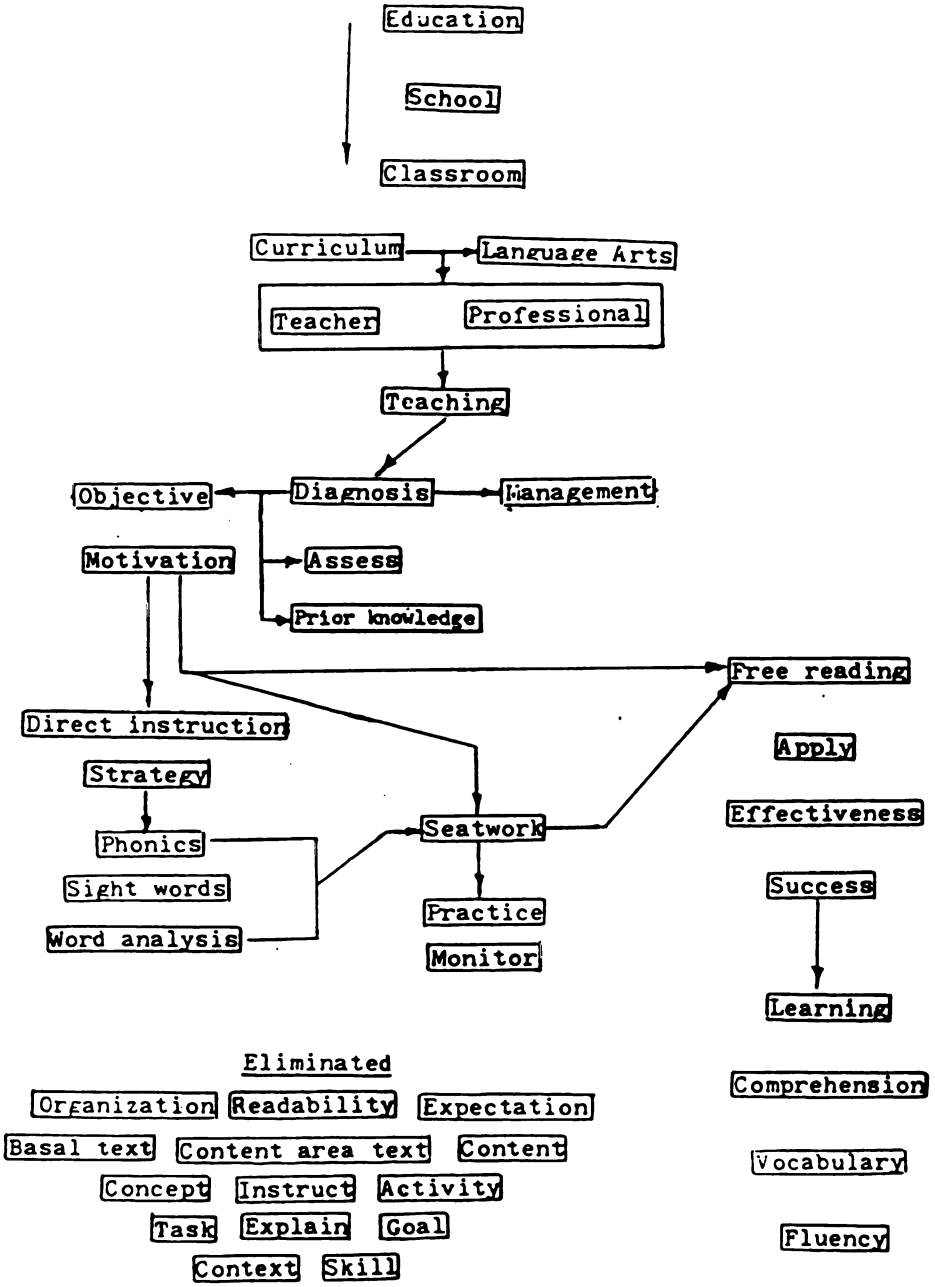


Figure D3 Subject D-February Semantic Map

definers stressed in educational psychology such as "goal." She included definers like "management" which were introduced in her classroom management class but eliminated the definer "organization" that had been emphasized. The structure of the map did not exhibit instruction incorrectly but it omitted definers emphasized in instruction.

Summary. During Segment Two Subject D did not exhibit incorporation of reading instruction in debriefings. The construction of her map remained connected and branched exhibiting a structured organization of reading instruction.

Interpretation. After fourteen weeks of instruction Subject D's conceptualization of reading instruction increased in the knowledge of general education classes and in relationships with reading instructional properties. With more class and property relationships, the properties became less cohesive and grouped. Her view of the teacher's interaction with the environment (student) continued to be one of "non-involvement." On a novice-expert (low to high knowledge continuum, it appeared that Subject D possessed a low moderate-knowledge of reading instruction. Thus, in the judgment of the researcher, Subject D's second interim conceptualization of reading instruction increased in the relationships of her knowledge rather than in the quantity of knowledge. At this time she appeared to break out of the conceptual rigidity by

thinking about alternative approaches in the reading instructional process.

Instructional Phase - Segment Three

In the last instructional phase Subject D continued to participate in reading methods class, the classroom organization and management class, and the debriefing sessions. She wrote a second set of reading definitions.

Debriefing Sessions. During a debriefing session Subject D showed evidence of a misconception regarding matching practice with the skill taught. She presented the strategy for the sound of a word with double "ee's." The practice involved words with "ee" and "ea" from the aspect of a short and long "e" sound. The researcher brought this to her attention. Subject D responded, "I do not think there is anything wrong with this page." The researcher reviewed reading methods instruction about matching practice to instruction. Subject D offered no response.

In another debriefing session the researcher reminded Subject D to provide practice to evaluate whether learning had taken place before presenting new material. The researcher said, "You gave them (the students) the strategy and went on immediately, assuming they knew it." Subject D's response was:

> Oh, I really screwed up really bad. This makes me so mad. Like I spent so much time on that and I thought everything was fine. Then I thought practice and I was like racking my brain for a long time. Oh, my brain was like all fumbled up

> and then today I went practice, practice! You could do million of things for practice and it was too late. I was so mad at myself because this is all just ruined. I wasted all this time just for nothing and it really makes me angry.

During another debriefing session the researcher asked Subject D about the decisions she made and information she processed during the lesson. Subject D said she had seven examples prepared but used only four because they (the students) were "getting the hang of it and I did not want to get them bored." Then she said, "It is bad that I did not make any other decisions."

In the last debriefing session the researcher asked Subject D what information she processed. She said that she was going to hand out two sheets of paper she had prepared but then she thought there would be too much "fumbling around" so she handed out only one. When asked if she had processed any more information she said, "I do not know, it is hard to think."

Briefly, in this segment Subject D exhibited confusion in presenting new material, providing practice, and then evaluating in accordance with reading methods instruction. She also had difficulty matching practice to her instruction. She assumed that because of a lack of attention learning was present.

Reading Definitions. During this segment she wrote the definitions for reading and reading instruction. Her reading definition was as follows:

> Reading is meaning-getting, first of all. It is also enjoyable. The meaning-getting concept is the most important. Children should see reading everywhere not just in a 30 minute reading group.

This definition included two major reading methods themes. Reading is: (1) meaning-getting and (2) enjoyable. She also alluded to the "real-world" aspect of reading. Elaboration, details, or examples were not given. Instead of a strict definition of reading Subject D produced a paragraph more closely associated with reading instruction. Her definition of reading instruction follows:

> Reading instruction should be focused on comprehension. Comprehension and enjoyment should be the goals of instruction. Instruction should also focus on how reading is used in the real world as well as other school subjects.

This definition included three major points: (1) comprehension, (2) enjoyment, and (3) real-world. All three reflected the incorporation of reading methods.

Summary. In the last segment Subject D showed evidence of confusion about major areas of reading instruction. She continued to exhibit confusion between instruction, practice and evaluation. Her definition of reading did not define reading. The definition of reading instruction contained concepts incorporated from reading methods.

Post Instructional Phase

In March after twenty weeks of reading instruction Subject D completed the Proposition Inventory again and constructed a fourth semantic map.

Proposition Inventory. She rated the Proposition Inventory (see Table D 1, p.237) basal text area with a net score of +2. She agreed with or was neutral in seven out of nine statements. Linear skills had the highest score (+5) of any other area. She agreed with seven statements and was undecided in one. She agreed with statements such as, "I believe that a significant part of a teacher's time should be spent in teaching basic reading skills." The interest area received the lowest score (-3). She disagreed with or was neutral in eight out of nine statements. She disagreed with statements like, "I believe that reading is not difficult for most children to learn if they are provided with stimulating and lively materials to read." The natural language area had a net score of +1. The statements in this area received mixed ratings: 3 agree, 3 neutral, 2 disagree and 1 undecided. The integrated whole rating was +4. She agreed with or was neutral in eight statements. She agreed with statements such as, "I believe that the teacher's role is to involve pupils in realistic reading tasks which illustrate the functional utility of reading."

In essence, Subject D agreed with all areas but interest. Linear skills received the highest rating. The area of interest was rated as mildly disagreeable. Between September and March her ratings were not altered in any one area by more than two points. Four statements in March were rated as undecided. Each statement was from

a different area. No statements were rated as undecided in September.

Thus, Subject D's March Proposition Inventory rating exhibited that change did not occur. The net number of points from her March inventory towards the reading teacher's rating was three. Since undecided statements appeared in four out of five areas, some general confusion appeared evident.

Semantic Map. Subject D's last map (see Figure D 4) included six more definers (36) than the previous one. It began with a hierarchy with the same three general terms: "education," "school," and "classroom." Instead of using "teaching" as a focus to begin more branching, she used the definer "instruct" (one that she had eliminated on the previous map). "Instruct" was branched to "diagnosis," "comprehension," "sight words," "seat work" and then to a column headed "assess." She illustrated a connection between the teacher "diagnosing" and "instructing" and then "monitoring." Under both groups of definers headed "comprehension" and "sight words," she referred to both of the columns as "strategies." Again she discussed reteaching if "assessing indicated that learning did not take place." She did not explain the definers. The major connections between definers were sequential like "then" and "next."

When the researcher asked her if this last map was different from the others, she said, "I do not think it

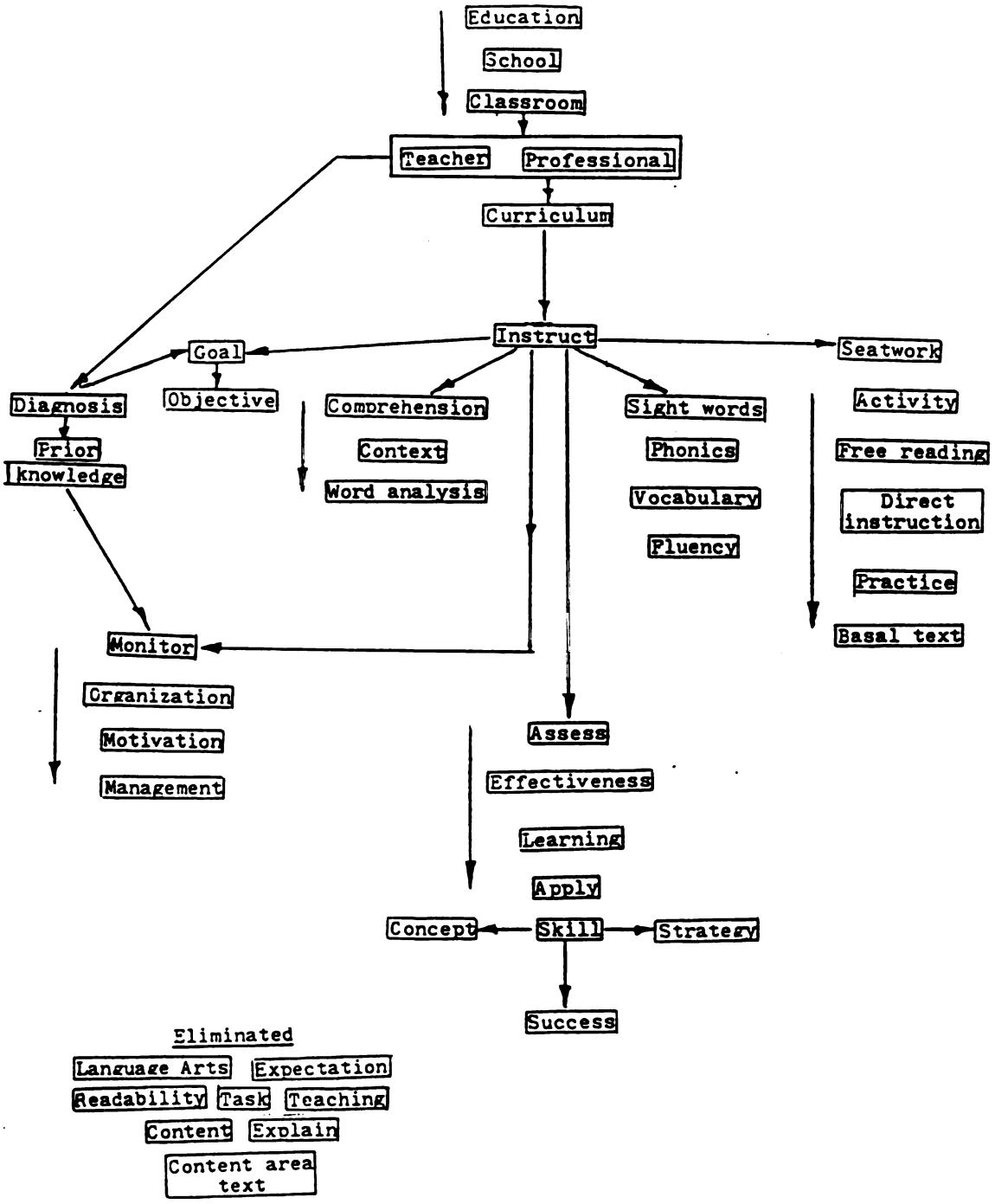


Figure D4 Subject D-March Semantic Map

is very much different at all. I know I started the same way and ended the same way."

Summary. Subject D's post instructional data indicated that on her map she had incorporated some, not all, instruction. Her Proposition Inventory showed evidence of little change, little incorporation of instructions, and also revealed the presence of some confusions.

Interpretation. After twenty weeks of instruction Subject D's conceptualization of reading instruction was an organized and related knowledge of general education classes which were integrated with four groups of reading instructional properties. The teacher's role in the environment (student) continued to be the assertive director. On a novice-expert (low to high knowledge) continuum it appeared that Subject D possessed a low moderate-knowledge of reading instruction. Thus, in the judgment of the researcher, Subject D's terminal conceptualization of reading instruction reverted to a very structured and organized knowledge framework stressing a rigid learning instructional process controlled by the teacher. Conceptual integration, relatedness, or personal depth of thought was not evident.

Summary of Data

Subject D's data offer mixed indications in regard to change and incorporation of instruction. Even though all four maps had the same basic hierarchical structure, each successive map became more branched and connected with

additional reading definers. This configuration indicated change and incorporation of instruction. However, at the same time some definers presented in reading and other instruction were omitted. Thus, more incorporation and change were possible. The Proposition Inventory did not show that change or incorporation of instruction had occurred. Her March net ratings in all areas were just three points closer to the reading teaching educator's than in September. She included several major instructional themes in her reading instruction definition, but she did not specifically define reading. Her debriefings exhibited confusion about reading methods instruction. She did exhibit incorporation of classroom management instruction.

Thus, there was evidence to indicate that Subject D changed and incorporated instruction, but there also was evidence which pointed to confusion, omission and a limited extent of change at the termination of the study.

Summary Interpretation

Subject D's conceptualization of reading instruction began with sparse and narrow knowledge. Through a gradual progression her conceptualization enlarged into a more organized and related knowledge of general education classes and groups of reading instructional properties. At the termination of instruction her conceptualization was very structured and did not appear to include any personal interpretation. She never allowed the environment (student)

that assisted to promote improved behavior in her reading group. Several times Subject D commented to the researcher that she wished the students in her reading group would sit with their hands folded and listen to her. She continued to say that she realized this attitude was not realistic or the way it should be. She appeared to be surprised when she implemented procedures from classroom management instruction that they really helped. In the judgment of the researcher, Subject D's greatest inhibitor to change seemed to be her own resistance to change, her attitude regarding the role of the teacher and student, and her inability to relate teacher education class instruction to each other. As she said about her four maps, "I started the same and ended the same."

Summary

This appendix presented the data gathered in this study for Subject D. The primary data source was the set of Subject D's semantic maps of reading instruction. The secondary data sources included: (1) Proposition Inventory (September and March), (2) reading debriefing sessions, and (3) reading definitions for reading and reading instruction (November and March). The data were reported in three phases: (1) pre-instructional, (2) instructional, and (3) post instructional. The data

were analyzed according to the three bodies of research reported in Chapter II to answer the research questions posed in this study.

In essence, Subject D's preconceptualization of reading instruction and her subsequent conceptual change was investigated during this reading study.

APPENDIX E

PROPOSITIONS ABOUT READING INSTRUCTION

MAY, 1978

1. I believe that pupil success in reading should be determined by noting progress from easier basal readers to harder basal readers.

   A B C D E

2. I believe that teachers should directly teach the basic skills of reading to those pupils who need them.

   A B C D E

3. I believe that the best reading materials are those which help children solve problems of importance to them.

   A B C D E

4. I believe that an important indicator of reading growth is how often a pupil voluntarily uses reading in his daily life.

   A B C D E

5. I believe that contextual clues are the most important word recognition aids and should receive more instructional emphasis than sight words or phonics.

   A B C D E

6. I believe that basal textbook materials are an important part of good instructional programs in reading.

   A B C D E

7. I believe that primary grade reading should emphasize decoding skills more than comprehension.

A B C D E

8. I believe that reading success should be measured primarily by noting how well the pupil uses his reading ability for other classroom activities.

A B C D E

9. I believe that the teacher's role is to help children learn to love reading by allowing frequent free reading and by conducting individual book conferences.

A B C D E

10. I believe that reading instruction should focus heavily on comprehension, even at the beginning stages of reading.

A B C D E

11. I believe that an important criteria for grouping pupils is the level basal textbook each is able to read.

A B C D E

12. I believe that all children should be systematically taught to use phonics skills.

A B C D E

13. I believe that the goal of developing comprehension is best achieved by giving pupils realistic reading problems which they see as meaningful in their lives.

A B C D E

14. I believe that reading instruction should emphasize the higher-level comprehension processes typically found in good children's literature.

A B C D E

15. I believe that a very important measure of reading success is the degree to which pupils use reading as a communication process.

A B C D E

16. I believe that considerable instructional time should be devoted to conducting guided reading lessons using selections such as those found in basal textbooks.

A B C D E

17. I believe that a carefully structured skills guide should be used when teaching reading to insure that each separate skill is mastered.

A B C D E

18. I believe that reading groups should be formed as the need for them arises and should be disbanded when the need has been met.

A B C D E

19. I believe that we should spend less time teaching pupils how to read and more time in getting him interested in reading.

A B C D E

20. I believe that reading materials should help children learn to read in a natural manner similar to the way they learned to speak.

A B C D E

21. Children who have similar skill deficiencies should be grouped together for instruction.

A B C D E

22. I believe that reading groups should be based on the pupils' interests.

A B C D E

23. I believe that teachers should spend more instructional reading time on helping children use language as a communication process.

A B C D E

24. I believe that word recognition should emphasize the new vocabulary words associated with each basal text story.

A B C D E

25. I believe that a significant part of a teacher's time should be spent in teaching basic reading skills.

A B C D E

26. I believe that word recognition instruction should not become more important than involving pupils in real-life reading tasks.

A B C D E

27. I believe that comprehension should be taught by asking questions about the basal text story being read.

A B C D E

28. I believe that one effective way to determine pupil reading success is to note how many skills he has learned.

A B C D E

29. I believe that a significant amount of the instructional time in reading should be spent on purposeful, real-life projects and activities which call for the use of reading.

A B C D E

30. I believe that word recognition instruction is not as important in reading as providing children with stimulating, interesting materials to read.

A B C D E

31. I believe that if grouping is used, pupil assignment to groups should reflect more emphasis on meaning cues in reading.

A B C D E

32. I believe that the teacher's role in reading is to assign pupils to appropriate basal materials and direct them as they complete the material.

A B C D E

33. I believe that fewer children would have difficulty learning to read if we stopped teaching reading during self-contained reading periods, and, instead, taught it as a part of all subjects.

A B C D E

34. I believe that children should be allowed to choose the stories and books they want to read during the regular reading period.

A B C D E

35. I believe that the teacher's role is to emphasize the communication aspects of reading more than the skills.

A B C D E

36. I believe that a basal text should be used to teach reading.

A B C D E

37. I believe that reading is a difficult process which must usually be taught in a step-by-step sequence if we are to develop good readers.

A B C D E

38. I believe that the teacher's role is to involve pupils in realistic reading tasks which illustrate the functional utility of reading.

A B C D E

39. I believe that reading is not difficult for most children to learn if they are provided with stimulating and lively materials to read.

A B C D E

40. I believe that reading instruction should focus more on the use of meaning cues and less on skill instruction.

A B C D E

41. I believe that I should spend equal amounts of time with the low, middle, and high basal text groups.

A B C D E

42. I believe that reading is composed of a series of hierarchical skills which must be taught sequentially and then used in combination if one is to read successfully.

A B C D E

43. I believe that reading instruction should be taught so that pupils can use reading successfully in all curricular areas.

A B C D E

44. I believe that reading would not be such a problem today if we made greater efforts to interest children in the reading of good children's literature.

A B C D E

45. I believe that too much emphasis is being placed on skills (especially decoding skills) in reading programs today.

A B C D E