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TEACHERS' THOUGHT PROCESSES
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THE IMPACT OF COGNITIVE COACHING ON TEACHERS' THOUGHT PROCESSES AS PERCEIVED BY COGNITIVELY COACHED TEACHERS IN THE PLYMOUTH-CANTON COMMUNITY SCHOOL DISTRICT

By

Norma Jean Foster

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ABSTRACT

THE IMPACT OF COGNITIVE COACHING ON
TEACHERS' THOUGHT PROCESSES
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Norma Jean Foster

The purpose of this study was to examine the extent to which cognitive coaching affected teachers' thought processes as perceived by cognitively coached teachers in the Plymouth-Canton Community School District. The four categories of teacher thought processes examined were: planning, teaching, analyzing and evaluating, and applying.

Procedure

A Teacher Thought Processes Questionnaire was developed to measure teacher perceptions. Mean and standard deviation were used to determine the level of impact of cognitive coaching on teacher thought processes. T-tests and analysis of variance were used to study how different groups perceived cognitive coaching. Teachers who received the cognitive coaching training in 1987 and 1988 participated in this study.

Major Findings

1. Teachers perceived cognitive coaching as having an average impact on thought processes in all areas.
2. Teachers at the elementary and secondary levels both perceived cognitive coaching as having an average impact on thought processes in all areas.

3. Teachers with 6-10, 11-20, and 21 or more years of teaching experience perceived cognitive coaching as having an average impact on thought processes in all areas. Teachers with less than 5 years of experience perceived cognitive coaching as having a low impact in planning and teaching, and an average impact in analyzing and evaluating, and applying.
4. Teachers who received the two-day training and five-day training both perceived cognitive coaching as having an average impact on thought processes in all areas.
5. Teachers who held seven or more conferences perceived cognitive coaching as having a high impact on thought processes in all areas. Teachers who held 4-6 conferences perceived cognitive coaching as having an average impact in planning, teaching, and applying, with a high impact in analyzing and evaluating. Teachers who held 1-3 conferences perceived cognitive coaching as having an average impact, and teachers who held 0 conferences perceived cognitive coaching as having a low impact in all areas.
6. Teachers who were conferenced by either an administrator or a teacher perceived cognitive coaching as having an average impact in all areas.

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CHAPTER I

THE PROBLEM

Introduction

Teaching is defined as "the process of making and implementing decisions, before, during, and after instruction, to increase the probability of learning" (Hunter, 1979). Teachers make decisions and select specific teacher behaviors based on what they know about their students, the learning, and the situation. Cognitive processes are used by teachers to guide behaviors and make decisions (Blumberg, 1974) (Glickman, 1980). (See Figure 1.) Therefore, the purpose of supervision should be to help teachers make better decisions about teaching by assisting teachers to reflect upon their own teaching. Teachers are adult learners. Supervision and staff development efforts should concentrate on developing teachers' cognitive processes (Sprinthall and Theis, 1983).

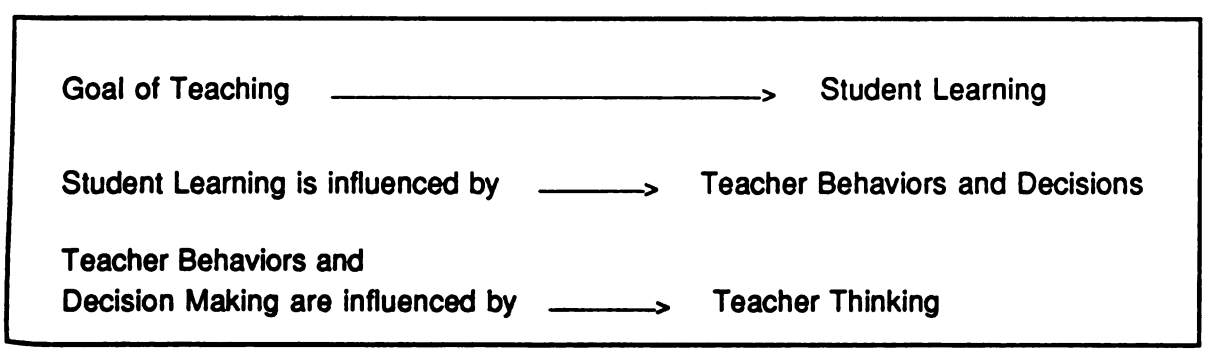

Figure 1 Theoretical Framework

Cognitive coaching is a clinical supervision model developed by Arthur Costa and Robert Garmston which is thought to develop teachers' cognitive processes. At this time no scientific research has been done to support this theory. Cognitive coaching is defined as "the supervisor's application of a set of strategies designed to enhance the teacher's perceptions, decisions, and intellectual functions" (Costa, 1985). This technique involves preconferencing with the teacher, observation of the teacher, and postconferencing with the teacher. The conferencer/supervisor in this model develops trust by being non-judgmental, and acts as a mediator or cognitive facilitator for the teacher. The trained supervisor, by the use of a paraphrasing and questioning technique helps the teacher reflect on his/her decisions.

Cognitive coaching differs from other current models of supervision which trains supervisors/conferencers to identify and reinforce instructional behaviors. The goal of this type of conference is greater use of the instructional behavior. The reinforcement and growth conferences lend themselves to judgment by the supervisor as to what is worthy of reinforcement and what needs to be "fixed" in the teacher. Cognitive coaching, on the other hand, gives teachers credit for having a mind of their own and knowing specific reasons why a certain teaching behavior is employed. In fact, Blumberg (1974) and Glickman (1980) cite that most teachers expect and respond favorably to a supervisory style which relates to their intellect. Cognitive coaching is thought to be such a model.

Purpose of the Study

The purpose of this study was to examine the extent to which cognitive coaching affected teachers' thought processes as perceived by cognitively coached teachers in the Plymouth-Canton Community School District. The four categories of teacher thought

processes examined were: planning, teaching, analyzing and evaluating, and applying.

Need for the Study

The ultimate goal of teaching is learning. Educators constantly strive to improve the teaching which affects learning. This is why the teacher thought processes behind the teaching behaviors and decisions which affect student learning must be examined. Teacher growth in the instructional process is vital to increased student learning. Research concerning teacher thought processes will provide more information about what teachers do intellectually which make an impact on teacher behaviors and decisions which affect learning. Staff development and supervision efforts can then be modified and supported by the results of research.

Definition of Terms

For this study, the following terms are defined in the context in which they are used in this dissertation:

COGNITIVE COACHING - A clinical supervision model which uses questioning and paraphrasing strategies by the coach/supervisor to focus the teacher on his/her thinking before, during, and after the teaching.

COACH/SUPERVISOR - The individual who has been trained in conferencing the teacher using the cognitive coaching model. The training was done by "The Institute for Intelligent Behavior" in 1987 and 1988. The coach may be an administrator or a teacher.

COGNITIVELY COACHED TEACHERS - Teachers who have been trained in the cognitive coaching model by "The Institute for Intelligent Behavior" in 1987 and 1988.

AUTONOMOUS SELF-SUPERVISION/ANALYSIS - The teacher's ability to perform the inner thought processes of supervision voluntarily and spontaneously without the need of a supervisor's intervention.

INTELLECTUAL AUTONOMY - The ability to think independently.

METACOGNITION - Being aware of one's thinking as one performs specific tasks and uses this awareness to control what one does (Marzano, 1988).

TEACHER THOUGHT PROCESSES - Teacher thinking in the four phases of teacher decision making (planning, teaching, analyzing and evaluating, and applying).

FOUR PHASES OF TEACHER DECISION MAKING - Teaching decisions fall into four categories: planning, teaching, analyzing and evaluating, and applying (Costa, 1985).

PEER COACHING - Teacher-to-teacher conferencing.

Assumptions

The assumptions of this study were as follows:

1. Teacher thought processes affect teaching behaviors and decisions. Teacher behaviors and decisions affect student learning.
2. Increased thinking about teaching makes a positive impact on learning.
3. The Teacher Thought Processes Questionnaire measures teachers' perceptions as to the extent to which cognitive coaching affected teacher thinking in the four phases of teacher decision making; planning, teaching, analyzing and evaluating, and applying.

4. Teachers who have found cognitive coaching helpful in the four phases of teaching are better able to perform the inner thought processes of supervision voluntarily and spontaneously without the need of a supervisor's intervention. They can think about their teaching independently and are intellectually autonomous.

Limitations

The limitations of this study were as follows:

1. This study was limited to the cognitively coached teachers in the Plymouth-Canton Community Schools in 1987 and 1988.
2. This study was limited to teachers' perceptions.
3. This study was limited to teachers' ability to accurately describe their perceptions of cognitive coaching.
4. The data of this study were affected by teachers' sincerity in responding to the questionnaire.
5. This study was conducted one year after the training was received.
6. This study was limited to those teachers who chose to return the questionnaire.

Research Questions

This study examined the extent to which cognitive coaching affected teacher thought processes in the four phases of teacher decision making as perceived by cognitively coached teachers in the Plymouth-Canton Community School District.

The specific research questions were:

1. To what extent do teachers perceive cognitive coaching as affecting their thought processes in the planning phase of teaching?

2. To what extent do teachers perceive cognitive coaching as affecting their thought processes in the teaching phase?
3. To what extent do teachers perceive cognitive coaching as affecting their thought processes in the analyzing and evaluating phase of teaching?
4. To what extent do teachers perceive cognitive coaching as affecting their thought processes in the applying phase of teaching?
5. Do teachers perceive cognitive coaching as affecting their thought processes in planning, teaching, analyzing and evaluating, and applying to the same extent?
6. Is there a difference in teacher perceptions about cognitive coaching among elementary and secondary teachers in planning, teaching, analyzing and evaluating, and applying?
7. Is there a difference in teacher perceptions of cognitive coaching among teachers with less than 5 years, 6-10 years, 11-20 years, or 21 years or more of teaching experience in planning, teaching, analyzing and evaluating, and applying?
8. Is there a difference in teacher perceptions about cognitive coaching among teachers who attended the two-day workshop and the five-day workshop in planning, teaching, analyzing and evaluating, and applying?
9. Is there a difference in teacher perceptions about cognitive coaching among teachers who have had 0 conferences, 1-3 conferences, 4-6 conferences, or 7 or more conferences in planning, teaching, analyzing and evaluating, and applying?
10. Is there a difference in teacher perceptions about cognitive coaching among teachers who have been mostly conferenced by an administrator or mostly

conferenced by a teacher in planning, teaching, analyzing and evaluating, and applying?

Design of the Study

Population

The population of the study was the elementary and secondary teachers from the Plymouth-Canton Community School District that received the Cognitive Coaching Training by "The Institute for Intelligent Behavior" in 1987 and 1988.

Procedure

A Teacher Thought Processes Questionnaire to measure teachers' perceptions about cognitive coaching was sent to all cognitively coached teachers. The questionnaire was developed by the researcher based on Costa and Garmston's "Some Indicators of Intellectual Autonomy" (1985), "Survey of Organizations 2000" by Rensis Likert Associates, Inc. (1988), and teacher observations. The questionnaire was piloted to ensure clarity of the instructions and items. Revisions were made. The questionnaire was reviewed by a panel of seven teachers, principals, and professors to ensure its validity. Based upon comments received, the questionnaire was revised.

The questionnaire consisted of seven demographic items, and thirty-six cognitive coaching items. There were nine items for each of the four areas of teacher decision making; planning, teaching, analyzing and evaluating, and applying. Each cognitive coaching item was answered by an "extent scale": 1-To a very little extent (VL), 2-To a little extent (L), 3-To some extent (S), 4-To a great extent (G), and 5-To a very great

extent (VG). Written permission was granted by Rensis Likert Associates to use their "extent scale."

The data were collected and analyzed to determine the extent to which cognitive coaching affected teachers' thought processes in the four phases of teacher decision making as perceived by the cognitively coached teachers in the Plymouth-Canton Community School District. All information was keyed into the computer at Michigan State University and the statistics were generated.

Mean and standard deviation were used to interpret the data from the rating scale of 1 to 5. The means between 1 and 2.33 were interpreted as cognitive coaching having a low impact on teacher thought processes, the means between 2.34 and 3.67 were interpreted as cognitive coaching having an average impact on teacher thought processes, and the means between 3.68 and 5 were interpreted as cognitive coaching having a high impact on teacher thought processes. T-tests and ANOVA were computed for the areas where two or more groups were studied.

Overview of the Study

This study consists of five chapters, appendices, and a bibliography.

In Chapter I the problem is defined in terms of the need, purpose, definition of terms, assumptions, limitations, research questions, design, and organization of the study.

In Chapter II a review of the literature is presented.

In Chapter III the design of the study is given. This includes a description of the population, questionnaire construction, and procedures for collecting and analyzing the data.

In Chapter IV the data are analyzed.

In Chapter V a summary of the study, findings, and recommendations for further study are discussed.

CHAPTER II

REVIEW OF LITERATURE

Research has demonstrated that teachers respond favorably to a supervisory style in which teachers are treated as the real "experts." This style consists of little emphasis on telling teachers what to do and much emphasis on teacher reflection (Blumberg, 1974). This chapter will review teaching as decision making, teacher thought processes, supervision, and coaching.

Teaching as Decision Making

Teaching is now defined as the process of making and implementing decisions, before, during, and after instruction, to increase the probability of learning (Hunter, 1979). Gump (1967) recorded teachers making almost 1300 decisions in a typical day. Teaching is decision making. Decisions are involved in every aspect of a teacher's professional life, especially in planning, implementing, and evaluating instruction (Dettre, 1970). The teacher uses complex cognitive processing to make this stream of continuous decisions (Shavelson, 1973). Teachers do not simply make decisions without thinking. Halpern (1984) states that a decision always involves two or more competing alternatives that may or may not be obvious to the decision maker. The teacher, as the decision maker, must create or choose an alternative that he/she thinks is best in the particular situation.

Shavelson (1976) describes five features of teacher decision making:

1. Choosing a teaching act from alternative acts.
2. Environmental conditions influence the effectiveness of a particular course of action.
3. An outcome can be identified for each course of action.
4. The measure of the outcome relates to the teacher's subjective interpretation.
5. The goal the teaching decision will attain.

Teacher Thought Processes

There are four phases of teacher decision making (Costa and Garmston, 1985; Shavelson, 1976): planning, teaching, analyzing and evaluating, and applying.

Intellectual thought performed prior to instruction is the teaching phase of planning. Decisions made during planning are thought to be the most important of all the phases because all other decisions rest upon the decisions made in this design stage, and planning decisions have the advantage of time (Shavelson, 1976).

Planning includes four elements (Shavelson, 1976; Shavelson and Stern, 1981; Costa and Garmston, 1985):

1. Describing student learning that will result from the instruction.
2. Identifying students' entry knowledge or capabilities.
3. Planning of the instructional sequence that will result in the desired student outcome.
4. Deciding on a method for evaluating the outcome.

The teaching phase includes decisions made while the teacher is interacting with students. These decisions are both planned and spontaneous. However, they seem to be more intuitive and unconscious as compared to the planning stage because of the constant interaction with students and the little time availability to ponder alternative teaching strategies (Costa and Garmston, 1985; Calfee, 1981).

Teachers must keep their teaching plan in their memory while teaching. They constantly monitor where they are and where the students are as compared to the original plan. This awareness of one's own cognitive processes is called metacognition (Flavell, 1976; Berliner, 1982; Rohrkemper, 1982).

Rigney (1980) described knowing where one is in a sequence of activities, finding errors, and fixing errors as self-monitoring skills mandatory for intellectual task performance. In the teaching act, teachers ask questions and design activities while deciding whether to move ahead or backtrack.

Teachers select a specific behavior from a repertoire of available behaviors or strategies (Gagne, 1966; Eisner and Vallance, 1973). They must recall what the desired student outcomes are, select information from the students to see the progress toward the desired outcome, and then formulate a hypothesis as to what will happen depending on the strategy selected. Student behavioral cues like degree of motivation and on-task behavior give the teacher feedback upon which to make decisions (Rohrkemper, 1982; Berliner, 1982).

Analyzing and evaluating involves the intellectual processes used to reflect upon and judge the teaching behaviors used in the teaching. Analyzing means collecting information about the actual student outcome and the intended outcome and to compare them. If there is a match between the intended and observed behavior, then there is

assimilation. If there is a mismatch or a discrepancy between the intended and observed behavior, then there is accommodation, and explanations are given by the teacher as to why the intended outcomes were not attained (Barr and Brown, 1971; Rohrkemper, 1982).

Shavelson (1976) describes evaluation as using the information about actual versus intended outcomes to judge the worth of prior decisions as well as to make current and future decisions.

The applying phase involves learning from prior experience. Teachers make decisions about future actions as a result of analyzing and evaluating (Costa and Garmston, 1985). The teacher makes generalizations from specific teaching experiences and uses this knowledge in future teaching acts. Teachers compare experiences and set up an internal system for predicting results of a specific teaching behavior. Without this system of experiences, teaching seems to be chaotic. This helps explain why inexperienced teachers are so stressed and appear to have a small repertoire of strategies (Doyle, 1979).

Supervision

The research on effective schools refer to a form of social organization. Goodlad (1983) refers to participation and agreement of goals. Edmonds (1979) discusses a climate of expectations and one conducive to discussing problems. Rutter (1979) describes social groups as having their own rules, values, and standards of behavior. Rutter (1979) refers to effective schools as being characterized by people working harmoniously together as part of an efficient system that offers both supervision and support for teachers.

Glickman (1984) supports the reshaping of the teachers' work environment into one that is conducive to reflection among teachers who are given the power to make decisions. Suggestions for creating a professional environment include supervisors providing more opportunities for teachers to make decisions, observe others, discuss teaching, and matching experienced teachers with inexperienced ones. DeSanctis and Blumberg (1979) found that professional teacher dialogue lasts less than two minutes daily.

Thompson (1981) states that teachers strive to be recognized as professional and to achieve autonomy. He supports a supervision model which gives teachers latitude for decision making and treats teachers as knowledgeable.

Sergiovanni (1985) describes supervision as relection-in-action:

> Professionals rely heavily on informed intuition as they create knowledge in use. Intuition is informed by theoretical knowledge on the one hand and by interacting with the context of practice on the other. When teachers use informed intuition, they are engaging in reflective practice. When supervisors use informed intuition, they too are engaging in reflective practice. Knowing is in the action itself, and reflective professionals (teachers and supervisors) become students of their practice. They research the context and experiment with different courses of action (p. 15).

To Schon (1984) reflection-in-action supervision involves criticizing and testing intuitive understandings of experiences in teaching which takes the form of a reflective conversation with the situation. Schon describes a critical missing link in current supervisory practice as the lack of reflection on the process of reflection.

Turner-Muecke (1986) studied the personal growth of a teacher and supervisor who used reflection in clinical supervision. Both teacher and supervisor reported an increased ability to be self-analytical.

Sprinthall and Sprinthall (1983) see a need for "careful and continuous guided reflection" in supervision. The teacher is viewed as an adult learner and must be

developed cognitively. The human brain begins its existence as a clean slate on which all experience can be written, remembered, and communicated. Human behavior depends upon the transmission of knowledge with the emphasis on learning and communication (MacLean, 1978).

The research of Harvey (1966) and Hunt and Joyce (1967) reported that teachers with high cognitive development are able to function with increased flexibility and complexity while teaching. Parkay (1979) documented high school teachers with high levels of conceptual understanding as having low stress and as having more positive relationships with colleagues. Oja's (1979) and Glassberg's (1979) research concluded that high cognitively developed teachers are able to utilize a wide variety of coping behaviors and employ a wide range of teaching models which make them more effective in classrooms than lower developed colleagues.

Clinical supervision, as designed by Robert Goldhammer (1969) and Morris Cogan (1973) focuses on the improvement of teacher's classroom instruction, whereas general supervision denotes supervisory activities which take place outside the classroom like revising curriculum and developing evaluation materials. The data in clinical supervision are the events which occur in the classroom. These events are analyzed and the relationship between teacher and supervisor form the basis of the program whereby strategies are designed to improve the students' learning by improving the teacher's behavior. The sequence of clinical supervision includes a preobservation conference, observation, analysis by the supervisor, a supervisory conference, and a post-conference analysis. Clinical supervision enables the teacher to remain in full control of the classroom and the kinds of decisions made. The supervisor makes suggestions of alternate teaching strategies, but the teacher has the final choice. The dialogue between the teacher and supervisor is based on an analysis of alternate

strategies which helps to increase the repertoire of the teacher. The rationale is that the greater the teacher's repertoire, the more apt the teacher is to select the strategy which is most effective for the particular teaching situation (Fischler, 1971).

Blumberg (1974) conducted a study with 166 teachers which showed that teachers were most defensive when the behavior of the supervisor was direct. The teachers reported that their communications with the supervisor were most supportive when the supervisor behaved in an indirect way. The teachers noted supervisory behavior as support-inducing when oriented toward problem solving, spontaneity, equality, empathy, and description. Supervisory behavior that was defense-inducing was oriented toward control, strategy, superiority, certainty, neutrality, and evaluation.

A second study was conducted by Blumberg (1974) in which 45 supervisors were given the same instrument as the 166 teachers. Supervisors characterized their behavior style as indirect, while teachers' perceptions were that supervisors were direct. Supervisors saw themselves as effective in helping teachers gain insight; however, teachers did not share in this view. Supervisors also found the time they spent with teachers as being more productive than did teachers.

Blumberg (1974) tape recorded and analyzed fifty conferences between supervisors and teachers. The analysis indicated:

1. The average conference lasted 13.5 minutes.
2. Supervisors gave information more than five times as often as they asked for it.
3. Supervisors tended to be more direct than indirect.
4. Approximately seven times as much time was spent by the supervisor in telling the teacher what to do as asking the teacher for suggestions for action.

5. Less than one percent of the supervisor's time was spent in asking the teacher for suggestions.
6. The behavior the teachers used least was that of asking the supervisors a question.

In another study, Blumberg (1974) found that teachers were split into two groups on perceiving positive supervisory behavior. One group was most positive about supervisors who listened and presented ideas. The other group was most positive about supervisors who primarily listened, encouraged, and clarified the teacher's own ideas.

Harris (1975) cited research by Alan Brown in which 78 student teachers were subjected to direct, pressured supervision. Forty-five percent of the teachers taught less effectively, twenty-six percent taught as well, and twenty-nine percent showed some improvement.

Studies described by Pavan (1983) indicate that more positive teacher attitudes about supervision are found with clinical supervision than with a more traditional, direct supervisory style. A study of thirty-five clinical supervision pairs revealed that training in the technique makes positive differences in the effectiveness of supervisory efforts (Thorlacius, 1984).

Cognitive Coaching

Cognitive coaching is a new clinical supervision model developed by Arthur Costa and Robert Garmston in 1985. Cognitive coaching is defined as the supervisor's application of a set of strategies designed to enhance the teacher's perceptions, decisions, and intellectual functions (Costa and Garmston, 1985). The rationale behind this technique is that teaching is a behavior--a behavior of decision making, and that the teacher has specific intellectual reasons for engaging in the particular teaching methodology and

making decisions deemed necessary to the learners. Since each teacher makes his/her own decisions through cognition, and has a style which is distinctly his/her own, the cognitive coach by use of a strategy, and a style to developmentally fit the teacher, "opens up" the mind of the teacher. This helps the teacher understand what is going on in his/her mind when he/she teaches, and helps the teacher clarify what teaching behaviors will be used. Through the use of paraphrasing what the teacher says and asking questions, the teacher is able to clarify and refine thought processes behind the teaching. This is thought to be a non-threatening model in which the teacher is regarded as an expert and as an important participant in the process. The teacher is never told what he/she should have done in the lesson.

The first part of the process entails the building of a collegial trusting relationship between the supervisor and teacher. The supervisor/coach in cognitive coaching may be an administrator or a teacher. This building of trust includes mirroring of body posture, voice tone, and language (Dilts, 1980; Falzett, 1981) as well as providing non-judgmental and objective feedback (Costa, 1984).

The preconference consists of the asking of many questions by the coach to the teacher. These questions are asked prior to the teaching of the lesson. They take the form of: What is your lesson about? What do you want your students to learn, and what behaviors will you see in them to know they have learned? What role would you like me to take during the observation? The teacher answers these questions during the preconference. The coach is not evaluative in his/her responses to the teacher. The coach merely paraphrases back to the teacher what he/she has said to assist in clarity of answers.

Soon after the preconference, the coach makes the observation in the classroom for the lesson described during the preconference. The coach focuses on what the teacher

told him/her to look for and record. In this manner, it is the teacher who makes the decision as to the role of the coach during the observation.

The postconference, uses the same questioning and paraphrasing techniques employed in the preconference. The questions by the coach include: How do you feel about your lesson? Did your students learn what you wanted them to, and what behaviors did you see in them during the lesson to know they learned? Did the student behavior performed match the desired student behavior? Would you change this lesson in the future, and how?

The next portion of this postconference involves the coach giving back to the teacher what the coach was asked to record during the observation. The teacher is given time to respond and analyze.

Peer Coaching

Teachers can build collegial relationships through clinical supervision by observing and conferencing each other (Smyth, 1985). This teacher-to-teacher conferencing technique may be called peer clinical supervision, colleague consultation (Smyth, 1986), collegial coaching, or it may take the form of cognitive coaching (Garmston, 1987). Nottingham and Dawson (1987) stress the importance of a well-defined supervisory system which improves communication, increases awareness of instructional objectives, focuses attention on curriculum development, and builds collegial relationships.

Peer clinical supervision places responsibility for instructional improvement in the hands of the teacher. Teachers must analyze their own behavior, and develop or find techniques for enhancing their own instruction (Smyth, 1986). Recent studies (Smyth, 1983) show that teachers learn from their individual and collective experiences and

that they share their expertise when they engage in frequent and reflective conversations about their teaching.

Coaching has three purposes. First, coaching builds communities of teachers who continuously engage in the study of teaching. Second, coaching develops a shared language among teachers. Third, coaching provides the needed follow-up after initial training. Coaching must follow initial staff development training if the new behaviors from the training are to be integrated into classroom practice (Showers, 1984; Showers, 1985). The transfer of new teaching strategies and skills requires substantial training (Joyce and Showers, 1983; Shaver, Davis, and Helburn, 1978; Weiss, 1978). Coaching is useful in mastering strategies that require new ways of thinking about objectives and the process by which they are attained (Showers, 1985).

Research on coaching indicates:

1. Coached teachers usually practice and develop new skills to a greater degree than do uncoached teachers who have had the same initial training. Coached teachers also use the new strategies more appropriately than uncoached teachers (Showers, 1982; Showers, 1984; Baker, 1983).
2. Coached teachers show greater long-term retention of knowledge about the new skill (Baker, 1983).
3. Coached teachers are more likely to teach new skills and strategies to students than uncoached teachers (Showers, 1984).
4. Coached teachers demonstrate clearer thinking about the purposes and uses of the new skills and strategies than uncoached teachers as evidenced by interviews, lesson plans, and performance (Showers, 1982; Showers 1984).

5. Coaching facilitates professional and collegial relationships which includes the development of a common language and school norms which support the continuous study of teaching (Little, 1982).

Coaching research supports the relationship of student achievement to the quality of the coaching (Mandeville and Rivers, 1988/1989). Student achievement in mathematics was higher when the coaching was conducted by both a principal and teacher trainer than when the coaching was done only by the principal. A second finding indicated that teachers' students whose coaches did not point out mistakes by the teacher or offer opinions about how the lesson should have been taught outperformed the students of other teachers whose coaches did point out mistakes and offer opinions.

Smyth (1982) examined Australian teachers' perceptions of peer clinical supervision. Teachers reported the process as being self-reflective, and that the colleague listened supportively to plans before the lesson, followed by an observational record and events of interest to the teacher. The greatest benefit of this supervision was considered by teachers to be their ability to govern what was analyzed. Teachers also reported that this process helped them to exercise greater control over their work environment, and the direction and pace of their own professional development (Smyth, 1983).

Results of a five-month study of peer supervision showed that teachers were able to share their insights with other teachers in a trusting, and non-threatening manner. The principal was regarded by teachers as a respected instructional leader, and the staff viewed the peer clinical supervision as a successful method for ongoing self-revitalization (Mattaliano, 1982).

Russell (1986) states that fostering reflection in peer clinical supervision is dependent upon a climate in which teachers can explore the meaning of reflection in a non-threatening atmosphere.

Guidelines for school improvement include approaching teachers as "experts" in their teaching. They should be helped to articulate what they are doing in the classroom, so that they can evaluate their work and thereby improve upon it (Lieberman and Miller, 1981). The major assumption of the peer coaching model is that teachers are experts with respect to instruction, and they believe they can help fellow teachers analyze teaching because they trust each other (Mello, 1984). Eisner (1982) describes a teacher consultant in peer supervision as "someone one talks to, someone who provides views to consider," and that the teacher, not the teacher consultant provides the initiative about what will be discussed since the teacher is the expert.

Much recent research carries a strong message that teachers cannot be expected to act like professionals until they are treated as professionals (Sergiovanni and Carver, 1980). Teachers must be given the opportunity to decide for themselves which areas in their teaching need development. Adults work harder to change behavior if they have been involved in the planning of what to change (Wood and Thompson, 1980).

Other research which supports the teacher as a professional is:

1. Teachers change more when they interact with peers than when they are told to change by administrators (Bentzen, 1975).
2. Teachers are more responsive to change and experimentation when they are allowed to be the primary decision maker (Tikunoff et al., 1981).
3. Teachers are more responsive to continuing education when they, rather than superiors, identify instructional improvement areas (Schiffer, 1978).

The end result of coaching is self-supervision by the teacher, or autonomy which is paramount to professional growth. Collegial coaching, as described by Garmston (1987) has goals of: refining teaching practices, increasing collegiality and professional dialogue, and promoting self-initiating, autonomous teacher thought. Cogan (1973) describes an objective of the clinical supervision conference as increasing autonomy in self-supervision. Goldhammer (1969) views the intent of clinical supervision as that of increasing teachers' incentives and skills for self-supervision. Zumwalt (1986) states that teachers as professionals should be expected to make decisions and be reflective and analytic about their own growth in teaching.

People learn what they live and experience (Roberts, 1984). Teachers who experience feedback from the clinical supervision process develop self-evaluation which ultimately promotes teaching improvement (Smyth, 1984). This means that teachers perform the inner thought processes of supervision by themselves without guidance from a supervisor or fellow teacher (Costa and Garmston, 1986).

Summary

This chapter reviewed research related to teacher decision making, teacher thought processes, supervision, and coaching.

Teaching is decision making before, during, and after instruction. Cognitive processes guide the teacher in making these decisions.

The four phases of teachers' thought processes in decision making are: planning, teaching, analyzing and evaluating, and applying. Planning is the intellectual thought performed prior to instruction. In the teaching phase, teachers must be aware of their own cognitive processes as they monitor their progress compared to their teaching plan. Analyzing and evaluating involves the intellectual processes used to reflect upon and

judge the teaching behaviors used in the teaching. In the applying phase, the teacher makes generalizations from specific teaching experiences and uses this knowledge in future teaching acts.

Research has demonstrated that teachers respond favorably to a supervisory style in which they are treated in a supportive, non-threatening manner. Teachers prefer an indirect supervisory style in which supervisors listen, encourage, and clarify teachers' ideas.

Research on coaching indicates that coached teachers practice, develop, and retain new skills to a greater degree than uncoached teachers with the same initial training. Coaching also facilitates the teaching of new skills to students and fosters professional and collegial relationships among coached teachers. Coaching is seen as fostering reflection in a non-threatening manner. The end result of coaching is self-supervision by the teacher for continued professional growth.

Much recent research carries the messge that teachers cannot be expected to act like professionals until they are treated as professionals. Teachers must be given the opportunity to decide for themselves which areas in their teaching need development.

CHAPTER III

DESIGN OF THE STUDY

This chapter on design includes the definition of the population, questionnaire construction, validity, reliability, data gathering, and analysis and interpretation of the data.

Purpose

The purpose of this study was to examine the extent to which cognitive coaching affected teachers' thought processes as perceived by cognitively coached teachers in the Plymouth-Canton Community School District. The four categories of teacher thought processes examined were planning, teaching, analyzing and evaluating, and applying.

Population

The Plymouth-Canton Community School District offered a five-day and a two-day Cognitive Coaching Training Workshop for Plymouth-Canton administrators and teachers in 1987 and 1988. For the five-day training, administrators chose teachers who they felt comfortable with to participate. Several of these teachers had been involved in an administrative internship program within the district. For the two-day training, administrators asked for volunteers and encouraged teachers who were responsive to developing collegial relationships. Both training sessions were conducted by "The Institute for Intelligent Behavior." The population consisted of all eighty-seven (87) teachers who received the training in 1987 and 1988, and were employed in the

district in 1989. All eighty-seven (87) teachers were asked to participate in the study. Eighty percent (70) of the total population chose to participate by returning the questionnaire.

Table 1 Return of Teacher Thought Processes Questionnaire

Total Teacher Population	Total Teacher Return	Teacher % Return
87	70	80%

Construction of the Questionnaire

The questionnaire was developed by the researcher based on Costa and Garmston's "Some Indicators of Intellectual Autonomy" (1985), "Survey of Organizations 2000" by Rensis Likert Associates, Inc. (1988), and teacher observations. The questionnaire was piloted by a group of six teachers to ensure clarity of the instructions and items. These six teachers became a part of the sample. Revisions were made.

The questionnaire consisted of seven demographic items, and thirty-six cognitive coaching items. The demographic items were: sex, age, teaching level, teaching experience, workshop attended, number of conferences, and administrator or teacher as conferencer. There were nine items for each of the four areas of teacher decision making (Table 2); planning, teaching, analyzing and evaluating, and applying. Each cognitive coaching item was answered by an "extent scale": 1-To a very little extent (VL), 2-To a little extent (L), 3-To some extent (S), 4-To a great extent (G), and 5-To a very great extent (VG). Written permission was granted by Rensis Likert Associates to use their "extent scale."

Table 2 Teacher Thought Processes Questionnaire: Key to Items for Each of the Four Phases

Teacher Thought Processes Phase	Question Numbers
Planning	1,5,6,13,16,19,28,31,34
Teaching	2,7,8,18,21,24,26,33,35
Analyzing and Evaluating	3,9,10,15,22,25,27,30,36
Applying	4,11,12,14,17,20,23,29,32

Validity

Validity of a questionnaire is the degree to which the questionnaire measures what it is supposed to measure. The Teacher Thought Processes Questionnaire was reviewed by a panel of seven teachers, administrators, and professors to ensure its validity. Revisions were made based on written comments from the panel.

Reliability

Reliability is the ability of a measuring device to measure consistently over repeated administration to the same set of respondents. Seven administrators, teachers, and professors reviewed the questionnaire for clarity of the questions. Revisions were made. A panel of six teachers piloted the questionnaire and revisions were made based on their written comments.

The Cronbach-α reliability coefficient was .96 for the planning phase, .96 for the teaching phase, .97 for the analyzing and evaluating phase, and .97 for the applying phase. These reliability coefficients are above the range of Muller's well constructed scale of a reliability coefficient from .8 to .9.

Data Gathering

The superintendent of the Plymouth-Canton Community School District was verbally contacted about permission to send the questionnaire to the cognitively coached teachers. He suggested that written permission be granted through the Public Relations Office. The Public Relations Office was sent a letter explaining the purpose of the study, and a copy of the questionnaire. Written permission was granted.

The questionnaires were sent with a cover letter to each cognitively coached teacher via inter-school mail. Two days after the deadline for the return of the questionnaire, teachers received a follow-up mailing. The initial mailing produced a 46% return, while the follow-up mailing added 34% for a total return of 80%.

Analysis of the Data

The responses from the Teacher Thought Processes Questionnaire were keyed into the computer at Michigan State University. The Statistical Package for the Social Sciences was used to compute the mean and standard deviation for the teachers' responses to each item and for each area studied. T-tests and ANOVA were computed for the areas where two or more groups were studied.

Interpretation of the Data

The questionnaire measures teachers' perceptions of the extent to which cognitive coaching has affected teacher thinking in the four phases of teacher decision making; planning, teaching, analyzing and evaluating, and applying. Mean and standard deviation were used to interpret the data from the rating scale of 1 to 5. The means between 1 and 2.33 were interpreted as cognitive coaching having a low impact on teacher thought processes, the means between 2.34 and 3.67 were interpreted as

cognitive coaching having an average impact on teacher thought processes, and the means between 3.68 and 5 were interpreted as cognitive coaching having a high impact on teacher thought processes. Two sample t-tests were conducted on teaching level, cognitive coaching workshop attended, and on administrator or teacher as conferencer, while ANOVAs were conducted on teaching experience and number of conferences involved in.

Research Questions

The purpose of this study was to examine the extent to which cognitive coaching has affected teachers' thought processes as perceived by cognitively coached teachers in the Plymouth-Canton Community School District.

The specific research questions were:

1. To what extent do teachers perceive cognitive coaching as affecting their thought processes in the planning phase of teaching?
2. To what extent do teachers perceive cognitive coaching as affecting their thought processes in the teaching phase?
3. To what extent do teachers perceive cognitive coaching as affecting their thought processes in the analyzing and evaluating phase of teaching?
4. To what extent do teachers perceive cognitive coaching as affecting their thought processes in the applying phase of teaching?
5. Do teachers perceive cognitive coaching as affecting their thought processes in planning, teaching, analyzing and evaluating, and applying to the same extent?
6. Is there a difference in teacher perceptions about cognitive coaching among elementary and secondary teachers in planning, teaching, analyzing and evaluating, and applying?

7. Is there a difference in teacher perceptions about cognitive coaching among teachers with less than 5 years, 6-10 years, 11-20 years, or 21 years or more of teaching experience in planning, teaching, analyzing and evaluating, and applying?
8. Is there a difference in teacher perceptions about cognitive coaching among teachers who attended the two day workshop and the five-day workshop in planning, teaching, analyzing and evaluating, and applying?
9. Is there a difference in teacher perceptions about cognitive coaching among teachers who have had 0 conferences, 1-3 conferences, 4-6 conferences, or 7 or more conferences in planning, teaching, analyzing and evaluating, and applying?
10. Is there a difference in teacher perceptions about cognitive coaching among teachers who have been mostly conferenced by an administrator or mostly conferenced by a teacher in planning, teaching, analyzing and evaluating, and applying?

Summary

Seventy out of eighty-seven teachers (80% return) chose to participate in this study which examined the extent to which cognitive coaching has affected teachers' thought processes as perceived by cognitively coached teachers in the Plymouth-Canton Community School District.

Cognitively coached teachers received and completed the Teacher Thought Processes Questionnaire which measured their perceptions about cognitive coaching in the four areas of planning, teaching, analyzing and evaluating, and applying. All responses were keyed into the computer at Michigan State University and the Statistical

Package for the Social Sciences was used to generate the statistics. Mean and standard deviation were used to measure the impact of cognitive coaching on teacher thought processes. T-tests and ANOVA were computed to study how different groups perceived cognitive coaching.

CHAPTER I V

ANALYSIS OF THE DATA

This chapter presents the data related to the purpose of examining the extent to which cognitive coaching affected teachers' thought processes as perceived by cognitively coached teachers in the Plymouth-Canton Community School District. The four categories of teacher thought processes examined were: planning, teaching, analyzing and evaluating, and applying.

Teachers' responses to the Teacher Thought Processes Questionnaire provided the data for teachers' perceptions about cognitive coaching and its impact on planning, teaching, analyzing and evaluating, and applying. Demographic information was obtained on sex, age, teaching level, teaching experience, cognitive coaching workshop attended, number of conferences involved in, and administrator or teacher as conferencer.

The analyses of the data are presented in the following manner:

1. Demographic data are presented.
2. The research question is given with the data, a description, and a table.
3. The means are interpreted as follows:

    1-2.33 Cognitive coaching has a low impact on teacher thought processes

    2.34-3.67 Cognitive coaching has an average impact on teacher thought processes

3.68-5 Cognitive coaching has a high impact on teacher thought processes

4. T-tests and ANOVA are presented where two or more groups were studied.

The chapter closes with a summary of the major findings.

Demographic Data

The objective of this study was to examine the extent to which cognitive coaching affected teachers' thought processes as perceived by cognitively coached teachers in the Plymouth-Canton Community School District. Of the eighty-seven questionnaires mailed, seventy were returned, representing an 80% return rate.

Sixteen percent (11) of the teacher respondents were male while eighty-one percent (57) were female with three percent (2) not responding to this item. Forty-nine percent (34) of the teachers were between the ages of 36-45, twenty-seven percent (19) were 46-55 years of age, eighteen percent (13) were 26-35 years of age, and six percent (4) were 56 years or older. The majority, or seventy-one percent (50) of the teachers taught at the elementary level, and twenty-nine percent (20) were secondary teachers. Most of the respondents, or sixty-six percent (46) had 11-20 years of teaching experience, twenty-four percent (17) had 21 or more years of experience, six percent (4) had 6-10 years of experience, and four percent (3) had less than five years of teaching experience. Forty-seven percent (34) attended the two-day training, and forty-nine percent (33) attended the five-day training, with four percent (3) not responding to this item. Thirty-six percent (25) were involved in 1-3 conferences, twenty-six percent (18) held 0 conferences, twenty-four percent (17) held 7 or more conferences, and thirteen percent (9) were involved in 4-6 conferences, with one percent (1) not responding to this item. Seventy-one percent (49)

had a teacher for the coach for most of the conferences, twelve percent (8) had an administrator for the coach for most of the conferences, and seventeen percent (12) marked not applicable since they did not do any conferencing, with one teacher not responding to this item. (See Table 3.)

Table 3 Frequency Distribution of Teachers' Responses to Sex, Age, Teaching Level, Teaching Experience, Workshop Attended, Conferences Held, and Administrator or Teacher for the Coach

Demographic Variable	Frequency	Percent
Sex:		
Male	11	16
Female	57	81
Blank	2	3
Age:		
25 years old or less	-	-
26-35 years	13	18
36-45 years	34	49
46-55 years	19	27
56 years or over	4	6
Teaching Level:		
Elementary	50	71
Secondary	20	29
Teaching Experience:		
Less than 5 years	3	4
6-10 years	4	6
11-20 years	46	66
21 years or more	17	24
Workshop Attended:		
2 days	34	47
5 days	33	49
Blank	3	4
Number of Conferences Held:		
0 conferences	18	26
1-3 conferences	25	36
4-6 conferences	9	13
7 or more conferences	17	24
Blank	1	1
Administrator or Teacher for the Coach:		
Administrator	8	12
Teacher	49	71
Not applicable	12	17

Research Questions

Research Question 1

To what extent do teachers perceive cognitive coaching as affecting their thought processes in the planning phase of teaching?

In rating the extent of impact of cognitive coaching on thought processes in planning (Table 4), teachers perceived cognitive coaching as having an average impact on all nine items. These specific items were:

1. plan lessons (mean=2.83)

5. choose your teacher behavior(s) for the lesson during the planning of the lesson (mean=3.04)

6. envision the sequence of the lesson during planning (mean=3.01)

13. think more when planning (mean=3.16)

16. envision the student learnings that are to result from your instruction (mean=3.03)

19. see the relationship between your specific lesson and your long-range teaching goal (mean=2.81)

28. plan how to assess the student learnings that will result from your instruction (mean=2.91)

31. plan the sequence of your lesson (what will happen first, second...) (mean=2.97)

34. decide on observable student behaviors that you want from the lesson (mean=2.97)

The overall rating for planning (mean=2.96) indicated that teachers perceived cognitive coaching as having an average impact on thought processes in planning.

Table 4 Means of Teachers' Responses about the Impact of Cognitive Coaching on Planning

Item	Mean	Standard Deviation
To what extent has cognitive coaching helped you		
1. plan lessons	2.83	1.16
5. choose your teacher behaviors for the lesson during the planning of the lesson	3.04	1.17
6. envision the sequence of the lesson during planning	3.01	1.17
13. think more when planning	3.16	1.19
16. envision the student learnings that are to result from your instruction	3.03	1.16
19. see the relationship between your specific lesson and your long-range teaching goal	2.81	1.07
28. plan how to assess the student learnings that will result from your instruction	2.91	1.12
31. plan the sequence of your lesson (what will happen first, second...)	2.97	1.19
34. decide on observable student behaviors that you want from the lesson	2.97	1.12
OVERALL	2.96	1.02

Research Question 2

To what extent do teachers perceive cognitive coaching as affecting their thought processes in the teaching phase?

In rating the extent of impact of cognitive coaching on thought processes during teaching (Table 5), teachers perceived cognitive coaching as having an average impact on all nine items. These specific items were:

2. teach lessons (mean=3.00)
7. choose your teacher behavior during the teaching of the lesson (mean=3.00)
8. make decisions during teaching (mean=2.89)
18. monitor your progress as far as implementing your lesson plan is concerned (mean=2.94)
21. remember your teaching plan during the teaching (mean=2.81)
24. alter your teaching plan as needed based on the behavior of your students (mean=2.94)
26. think more during teaching (mean=2.94)
33. become more aware of students' behavioral cues that they are with you or not with you (mean=2.97)
35. use clear and precise language during teaching (mean=2.91)

The overall rating for teaching (mean=2.92) indicated that teachers perceived cognitive coaching as having an average impact on thought processes in teaching.

Table 5 Means of Teachers' Responses about the Impact of Cognitive Coaching on Teaching

Item	Mean	Standard Deviation
To what extent has cognitive coaching helped you		
2. teach lessons	3.00	1.13
7. choose your teacher behavior during the teaching of the lesson	3.00	1.13
8. make decisions during teaching	2.89	1.15
18. monitor your progress as far as implementing your lesson plan is concerned	2.94	1.15
21. remember your teaching plan during the teaching	2.81	1.17
24. alter your teaching plan as needed based on the behavior of your students	2.94	1.15
26. think more during teaching	2.94	1.12
33. become more aware of students' behavioral cues that they are with you or not with you	2.97	1.18
35. use clear and precise language during teaching	2.91	1.07
OVERALL	2.92	.99

Research Question 3

To what extent do teachers perceive cognitive coaching as affecting their thought processes in the analyzing and evaluating phase of teaching?

In rating the extent of impact of cognitive coaching on thought processes in the analyzing and evaluating phase (Table 6), teachers perceived cognitive coaching as having an average impact on all nine items. These specific items were:

3. analyze and evaluate lessons you have taught (mean=3.31)
9. think after your teaching about the lesson (mean=3.36)
10. evaluate your instruction by observing student behaviors (mean=3.17)
15. realize that you are in control of the learning that takes place (mean=3.06)
22. compare intended to actual student behavior (mean=2.97)
25. remember student and teacher behavior from the teaching (mean=2.97)
27. self-evaluate your own actions during planning and teaching (mean=3.39)
30. think about your teaching behaviors (mean=3.28)
36. analyze why objectives were or were not achieved during the lesson (mean=3.16)

The overall rating for analyzing and evaluating (mean=3.16) indicated that teachers perceived cognitive coaching as having an average impact on thought processes in analyzing and evaluating.

Table 6 Means of Teachers' Responses about the Impact of Cognitive Coaching on Analyzing and Evaluating

Item	Mean	Standard Deviation
To what extent has cognitive coaching helped you		
3. analyze and evaluate lessons you have taught	3.31	1.28
9. think after your teaching about the lesson	3.36	1.12
10. evaluate your instruction by observing student behaviors	3.17	1.06
15. realize that you are in control of the learning that takes place	3.06	1.21
22. compare intended to actual student behavior	2.97	1.13
25. remember student and teacher behavior from the teaching	2.97	1.09
27. self-evaluate your own actions during planning and teaching	3.39	1.27
30. think about your teaching behaviors	3.28	1.11
36. analyze why objectives were or were not achieved during the lesson	3.16	1.17
OVERALL	3.16	1.05

Research Question 4

To what extent do teachers perceive cognitive coaching as affecting their thought processes in the applying phase of teaching?

In rating the extent of impact of cognitive coaching on thought processes in the applying phase (Table 7), teachers perceived cognitive coaching as having an average impact on all nine items. The specific items were:

4. apply what you have learned in your teaching to future lessons (mean=3.11)
11. think about alternative courses of action for your teaching (mean=3.21)
12. judge the worth of decisions made during your teaching (mean=3.01)
14. make a commitment to experimenting with your own teaching behaviors (mean=3.17)
17. generate alternative courses of action for your teaching (mean=3.09)
20. decide which teaching acts and methods are effective for you in certain teaching situations (mean=3.03)
23. decide what you need to do to have future teaching successes (mean=3.07)
29. think more about using what you learned during the lesson in future lessons (mean=3.06)
32. plan future lesson strategies based on your analysis of previous lessons taught (mean=3.16)

The overall rating for applying (mean=3.08) indicated that teachers perceived cognitive coaching as having an average impact on thought processes in applying.

Table 7 Means of Teachers' Responses about the Impact of Cognitive Coaching on Applying

Item	Mean	Standard Deviation
To what extent has cognitive coaching helped you		
4. apply what you have learned in your teaching to future lessons	3.11	1.19
11. think about alternative courses of action for your teaching	3.21	1.05
12. judge the worth of decisions made during your teaching	3.01	1.11
14. make a commitment to experimenting with your own teaching behaviors	3.17	1.18
17. generate alternative courses of action for your teaching	3.09	1.12
20. decide which teaching acts and methods are effective for you in certain teaching situations	3.03	1.11
23. decide what you need to do to have future teaching successes	3.07	1.14
29. think more about using what you learned during the lesson in future lessons	3.06	1.12
32. plan future lesson strategies based on your analysis of previous lessons taught	3.16	1.13
OVERALL	3.08	1.03

Research Question 5

Do teachers perceive cognitive coaching as affecting their thought processes in planning, teaching, analyzing and evaluating, and applying to the same extent?

In rating the extent of impact of cognitive coaching on thought processes in the planning, teaching, analyzing and evaluating, and applying phases (Table 8), teachers perceived cognitive coaching as having an average impact on all four areas: planning (overall mean=2.96), teaching (overall mean=2.92), analyzing and evaluating (overall mean=3.16), and applying (overall mean=3.08).

Table 8 Overall Means of Teachers' Responses about the Impact of Cognitive Coaching on Planning, Teaching, Analyzing and Evaluating, and Applying

Thought Processes Phase	Overall Mean	Standard Deviation
Planning	2.96	1.02
Teaching	2.92	.99
Analyzing and Evaluating	3.16	1.05
Applying	3.08	1.03

Research Question 6

Is there a difference in teacher perceptions about cognitive coaching among elementary and secondary teachers in planning, teaching, analyzing and evaluating, and applying?

Data Related to Planning

In rating the extent of impact of cognitive coaching on thought processes in planning among elementary and secondary teachers (Table 9), both groups perceived cognitive coaching as having an average impact on all nine planning items.

There were no low impact or high impact ratings on any items for either the elementary or secondary teachers' perceptions.

In the overall rating for planning (elementary mean=2.99, secondary mean=2.87), both elementary and secondary teachers perceived cognitive coaching as having an average impact on thought processes in planning.

Table 9 Means of Elementary Teachers' and Secondary Teachers' Responses about the Impact of Cognitive Coaching on Planning

Item	Elementary Teachers Mean	Elementary Teachers SD	Secondary Teachers Mean	Secondary Teachers SD
To what extent has cognitive coaching helped you				
1. plan lessons	2.89	1.14	2.65	1.23
5. choose your teacher behaviors for the lesson during planning of the lesson	3.02	1.15	3.10	1.25
6. envision the sequence of the lesson during planning	3.02	1.16	3.00	1.21
13. think more when planning	3.25	1.18	2.95	1.23
16. envision the student learnings that are to result from your instruction	3.06	1.16	2.95	1.19
19. see the relationship between your specific lesson and your long-range teaching goal	2.90	1.06	2.60	1.10
28. plan how to assess the student learnings that will result from your instruction	2.90	1.12	2.95	1.13
31. plan the sequence of your lesson (what will happen first, second...)	2.98	1.15	2.95	1.32
34. decide on observable student behaviors that you want from the lesson	3.06	1.05	2.74	1.28
OVERALL	2.99	1.00	2.87	1.07

Data Related to Teaching

In rating the extent of impact of cognitive coaching on thought processes in teaching among elementary and secondary teachers (Table 10), elementary teachers perceived cognitive coaching as having an average impact on all nine items of teaching while secondary teachers perceived cognitive coaching as having an average impact on eight of the nine items. Item 21 (extent cognitive coaching has helped you to remember your teaching plan during the teaching) was rated as low impact (mean=2.3) by secondary teachers as compared to average impact (mean=3.02) by elementary teachers.

There were no high impact ratings by elementary or secondary teachers for the teaching phase.

In the overall rating for teaching (elementary mean=2.96, secondary mean=2.79), elementary and secondary teachers both perceived cognitive coaching as having an average impact on thought processes in teaching.

Table 10 Means of Elementary Teachers' and Secondary Teachers' Responses about the Impact of Cognitive Coaching on Teaching

Item	Elementary Teachers Mean	Elementary Teachers SD	Secondary Teachers Mean	Secondary Teachers SD
To what extent has cognitive coaching helped you				
2. teach lessons	3.00	1.14	3.00	1.12
7. choose your teacher behavior during teaching of the lesson	2.94	1.13	3.15	1.14
8. make decisions during teaching	2.84	1.13	3.00	1.21
18. monitor your progress as far as implementing your lesson plan is concerned	3.06	1.11	2.65	1.23
21. remember your teaching plan during the teaching	3.02	1.15	2.30	1.08
24. alter your teaching plan as needed based on the behavior of your students	3.04	1.12	2.70	1.22
26. think more during teaching	2.96	1.14	2.90	1.12
33. become more aware of students' behavioral cues that they are with you or not with you	3.06	1.07	2.75	1.12
35. use clear and precise language during teaching	3.00	.98	2.70	1.26
OVERALL	2.96	.97	2.79	1.04

Data Related to Analyzing and Evaluating

In rating the extent of impact of cognitive coaching on thought processes in analyzing and evaluating among elementary and secondary teachers (Table 11), both groups perceived cognitive coaching as having an average impact on all nine analyzing and evaluating items.

There were no low impact or high impact ratings by elementary or secondary teachers.

In the overall rating for analyzing and evaluating (elementary mean=3.2, secondary mean=3.05) the elementary and secondary teachers both perceived cognitive coaching as having an average impact on thought processes in analyzing and evaluating.

Table 11 Means of Elementary Teachers' and Secondary Teachers' Responses about the Impact of Cognitive Coaching on Analyzing and Evaluating

Item	Elementary Teachers Mean	Elementary Teachers SD	Secondary Teachers Mean	Secondary Teachers SD
To what extent has cognitive coaching helped you				
3. analyze and evaluate	3.34	1.30	3.25	1.25
9. think after your teaching about the lesson	3.43	1.15	3.20	1.06
10. evaluate your instruction by observing student behaviors	3.20	1.10	3.10	.97
15. realize that you are in control of the learning that takes place	3.10	1.23	2.95	1.18
22. compare intended to actual student behavior	3.02	1.14	2.84	1.12
25. remember student and teacher behavior from the teaching	2.96	1.09	3.00	1.11
27. self-evaluate your own actions during planning and teaching	3.49	1.24	3.15	1.35
30. think about your teaching behaviors	3.33	1.13	3.15	1.09
36. analyze why objectives were or were not achieved during the lesson	3.27	1.15	2.90	1.21
OVERALL	3.20	1.06	3.05	1.02

Data Related to Applying

In rating the extent of impact of cognitive coaching on thought processes in the applying phase among elementary and secondary teachers (Table 12), both groups perceived cognitive coaching as having an average impact on all nine items.

There were no low impact or high impact ratings by elementary or secondary teachers.

In the overall rating for applying (elementary mean=3.14, secondary mean=2.92) elementary and secondary teachers both perceived cognitive coaching as having an average impact on thought processes in the applying phase.

Table 12 Means of Elementary Teachers' and Secondary Teachers' Responses about the Impact of Cognitive Coaching on Applying

Item	Elementary Teachers Mean	Elementary Teachers SD	Secondary Teachers Mean	Secondary Teachers SD
To what extent has cognitive coaching helped you				
4. apply what you have learned in your teaching to future lessons	3.14	1.23	3.05	1.10
11. think about alternative courses of action for your teaching	3.29	1.01	3.00	1.12
12. judge the worth of decisions made during your teaching	3.10	1.05	2.80	1.24
14. make a commitment to experimenting with your own teaching behaviors	3.27	1.20	2.95	1.10
17. generate alternative courses of action for your teaching	3.14	1.08	2.95	1.23
20. decide which teaching acts and methods are effective for you in certain teaching situations	3.18	1.13	2.65	.99
23. decide what you need to do to have future teaching successes	3.18	1.09	2.80	1.24
29. think more about using what you learned during the lesson in future lessons	3.10	1.15	2.95	1.05
32. plan future lesson strategies based on your analysis of previous lessons taught	3.17	1.12	3.15	1.18
OVERALL	3.14	1.04	2.92	1.02

Overall Means for Teaching Level

In the overall rating (Table 13), teachers who teach at the elementary and secondary levels perceived cognitive coaching as having an average impact on thought processes in all four areas of planning, teaching, analyzing and evaluating, and applying.

Table 13 Overall Means of Elementary Teachers' and Secondary Teachers' Responses about the Impact of Cognitive Coaching on Planning, Teaching, Analyzing and Evaluating, and Applying

Thought Processes Phase	Elementary Teachers Mean	Elementary Teachers SD	Secondary Teachers Mean	Secondary Teachers SD
Planning	2.99	1.00	2.87	1.07
Teaching	2.96	.97	2.79	1.04
Analyzing and Evaluating	3.20	1.06	3.05	1.02
Applying	3.14	1.04	2.92	1.02

Two Sample t-Test

The two sample t-test performed on the elementary and scondary groups of teachers indicated that the means were not statistically significant (Table 14) in all four areas of planning, teaching, analyzing and evaluating, and applying. Therefore, samples came from populations with the same mean, and the treatment of being in the elementary or secondary sample had no effect. There was no difference in teacher perceptions of cognitive coaching among elementary and secondary teachers.

Table 14 Two Sample t-Test for Teaching Level

Thought Processes Phase	T Value	P Value
Planning	.42	.67
Teaching	.65	.52
Analyzing and Evaluating	.58	.58
Applying	.80	.43

Research Question 7

Is there a difference in teacher perceptions about cognitive coaching among teachers with less than 5 years, 6-10 years, 11-20 years, or 21 years or more of teaching experience in planning, teaching, analyzing and evaluating, and applying?

Data Related to Planning

In rating the extent of impact of cognitive coaching on teacher thought processes in the planning phase for years of teaching experience (Table 15), teachers with 11-20 years of teaching experience and 21 or more years of teaching experience rated cognitive coaching as having an average impact on all nine items.

Teachers with 6-10 years of teaching experience perceived cognitive coaching as having an average impact on planning in seven of the items, and a high impact on planning on the following items:

5. Extent cognitive coaching helped you in choosing your teacher behavior(s) for the lesson during the planning of the lesson (mean=4.25).
6. Extent cognitive coaching helped you to envision the sequence of the lesson during planning (mean=4.25).

Teachers with less than five years teaching experience perceived cognitive coaching as having a low impact on planning in eight of the items and an average impact on the following item:

31. Extent cognitive coaching helped you to plan the sequence of your lesson (mean=2.67).

In the overall rating for the impact of cognitive coaching on thought processes in planning, teachers with less than five years of experience perceived cognitive coaching as having a low impact (mean=2.11), while teachers with 6-10 years (mean=3.36),

11-20 years (mean=2.93), and 21 or more years (mean=3.07) of teaching experience all perceived cognitive coaching as having an average impact on planning.

Table 15 Means of Teachers' Responses about the Impact of Cognitive Coaching on Planning for Years of Teaching Experience

Item	Less than 5 yrs. Mean	SD	6-10 yrs. Mean	SD	11-20 yrs. Mean	SD	21 yrs. or more Mean	SD
To what extent has cognitive coaching helped you								
1. plan lessons	1.67	1.15	3.50	.58	2.78	1.24	3.00	.94
5. choose your teaching behaviors for the lesson during the planning of the lesson	2.00	1.00	4.25	.50	3.00	1.17	3.06	1.14
6. envision the sequence of the lesson during planning	1.67	.58	4.25	.50	2.93	1.23	3.18	.88
13. think more when planning	2.33	1.15	2.75	1.26	3.28	1.26	3.24	1.03
16. envision the student learnings that are to result from your instruction	2.00	1.00	3.25	1.71	3.02	1.11	3.18	1.19
19. see the relationship between your specific lesson and your long-range teaching goal	2.00	1.00	3.00	1.41	2.77	1.05	3.00	1.06
28. plan how to assess the student learnings that will result from your instruction	2.33	1.15	3.33	.58	2.96	1.13	2.82	1.19
31. plan the sequence of your lesson (what will happen first, second...)	2.67	1.53	3.00	1.63	2.93	1.21	3.12	1.05
34. decide on observable student behaviors that you want from the lesson	2.33	1.15	3.25	1.50	2.95	1.12	3.06	1.09
OVERALL	2.11	.97	3.36	1.01	2.93	1.06	3.07	.90

Data Related to Teaching

In rating the extent of impact of cognitive coaching on teacher thought processes in the teaching phase for years of teaching experience (Table 16), teachers with 11-20 years of teaching experience and 21 or more years of teaching experience rated cognitive coaching as having an average impact on all nine items.

Teachers with 6-10 years of teaching experience perceived cognitive coaching as having an average impact on teaching in six of the items, a low impact on one item (21. Extent cognitive coaching helped you remember your teaching plan during the teaching (mean=2.25)), and a high impact on these specific items:

2. Extent cognitive coaching helped you with teaching lessons (mean=3.75)
8. Extent cognitive coaching helped you to make decisions during teaching (mean=4.0).

Teachers with less than 5 years of teaching experience perceived cognitive coaching as having a low impact on teaching for all nine items.

In the overall rating, teachers with 6-10 years (mean=3.22), 11-20 years (mean=2.87), and 21 or more years (mean 3.12) perceived cognitive coaching as having an average impact on thought processes in teaching, while teachers with less than five years of experience peceived cognitive coaching as having a low impact (mean=2.04) on thought processes in teaching.

Table 16 Means of Teachers' Responses about the Impact of Cognitive Coaching on Teaching for Years of Teaching Experience

Item	Less than 5 yrs. Mean	SD	6-10 yrs. Mean	SD	11-20 yrs. Mean	SD	21 yrs. or more Mean	SD
To what extent has cognitive coaching helped you								
2. teach lessons	2.33	1.53	3.75	.96	2.91	1.15	3.18	1.01
7. choose your teacher behavior during the teaching of the lesson	2.33	1.55	3.50	1.29	2.96	1.13	3.12	1.11
8. make decisions during teaching	1.33	.58	4.00	.82	2.76	1.12	3.24	1.03
18. monitor your progress as far as implementing your lesson plan is concerned	2.00	1.00	3.00	1.41	2.96	1.22	3.06	.90
21. remember your teaching plan during the teaching from your instruction	2.00	1.00	2.25	.96	2.82	1.21	3.05	1.09
24. alter your teaching plan as needed based on the behavior of your students	2.00	1.00	3.00	1.41	2.96	1.19	3.06	1.03
26. think more during teaching	2.18	1.07	2.88	1.13	3.67	.87	3.53	.62
33. become more aware of students' behavioral cues that they are with you or not with you	2.00	1.00	3.25	.96	2.96	1.13	3.12	.99
35. use clear and precise language during teaching	2.00	1.00	3.25	1.71	2.84	1.07	3.18	.88
OVERALL	2.04	.90	3.22	.97	2.87	1.01	3.12	.92

Data Related to Analyzing and Evaluating

In rating the extent of impact of cognitive coaching on teacher thought processes in the analyzing and evaluating phase for years of teaching experience (Table 17), teachers with 11-20 years of teaching experience and 21 or more years of teaching experience rated cognitive coaching as having an average impact on all nine items.

Teachers with 6-10 years of teaching experience perceived cognitive coaching as having an average impact on analyzing and evaluating in five of the items, and a high impact on these specific items:

3. Extent cognitive coaching helped you with analyzing and evaluating lessons you have taught (mean=3.75).
9. Extent cognitive coaching helped you to think after your teaching about the lesson (mean=3.75).
10. Extent cognitive coaching helped you to evaluate your instruction by observing student behaviors (mean=3.75).
30. Extent cognitive coaching helped you to think about your teaching behaviors (mean=3.75).

Teachers with less than 5 years of teaching experience perceived cognitive coaching as having a low impact for four items and an average impact for the remaining five items.

In the overall means, teachers with less than five years (mean=2.44), 6-10 years (mean=3.45), 11-20 years (mean=3.18), and 21 or more years (mean=3.16) of teaching experience all rated cognitive coaching as having an average impact on thought processes in analyzing and evaluating.

Table 17 Means of Teachers' Responses about the Impact of Cognitive Coaching on Analyzing and Evaluating for Years of Teaching Experience

Item	Less than 5 yrs. Mean	SD	6-10 yrs. Mean	SD	11-20 yrs. Mean	SD	21 yrs. or more Mean	SD
To what extent has cognitive coaching helped you								
3. analyze and evaluate	2.67	1.53	3.75	.50	3.37	1.36	3.18	1.19
9. think after your teaching about the lesson	2.67	1.53	3.75	.50	3.38	1.21	3.35	.93
10. evaluate your instruction by observing student behaviors	1.67	.58	3.75	.96	3.24	1.09	3.12	.86
15. realize that you are in control of the learning that takes place	1.67	.58	3.25	1.71	3.09	1.12	3.18	1.33
22. compare intended to actual student behavior	1.67	.58	3.33	.58	3.09	1.14	2.82	1.13
25. remember student and teacher behavior from the teaching	2.33	1.15	3.33	.58	2.95	1.14	3.06	1.03
27. self-evaluate your own actions during planning and teaching	3.33	2.08	3.50	1.70	3.42	1.29	3.29	1.10
30. think about your teaching behaviors	3.00	1.73	3.75	.50	3.29	1.14	3.18	1.07
36. analyze why objectives were or were not achieved during the lesson	3.00	1.73	3.25	1.50	3.11	1.19	3.29	1.05
OVERALL	2.44	1.26	3.45	.89	3.18	1.10	3.16	.91

Data Related to Applying

In rating the extent of impact of cognitive coaching on teacher thought processes in the applying phase for years of teaching experience (Table 18), teachers with 11-20 years of teaching experience and 21 or more years of teaching experience rated cognitive coaching as having an average impact on all nine items.

Teachers with 6-10 years of teaching experience perceived cognitive coaching as having an average impact on applying in five of the items, and a high impact on these specific items:

4. Extent cognitive coaching helped you with applying what you have learned in your teaching to future lessons (mean=3.75).
11. Extent cognitive coaching helped you to think about alternative courses of action for your teaching (mean=3.75).
17. Extent cognitive coaching helped you to generate alternative courses of action for your teaching (mean=4.0).
32. Extent cognitive coaching helped you to plan future lesson strategies based on your analysis of previous lessons taught (mean=3.75).

Teachers with less than 5 years of teaching experience perceived cognitive coaching as having a low impact for four items and an average impact for the remaining five items.

In the overall means, teachers with less than five years (mean=2.56), 6-10 years (mean=3.47), 11-20 years (mean=3.06), and 21 or more years (mean=3.12) of teaching experience all rated cognitive coaching as having an average impact on thought processes in applying.

Table 18 Means of Teachers' Responses about the Impact of Cognitive Coaching on Applying for Years of Teaching Experience

Item	Less than 5 yrs. Mean	SD	6-10 yrs. Mean	SD	11-20 yrs. Mean	SD	21 yrs. or more Mean	SD
To what extent has cognitive coaching helped you								
4. apply what you have learned in your teaching to future lessons	2.67	1.53	3.75	.50	3.15	1.23	2.94	1.14
11. think about alternative courses of action for your teaching	2.67	1.53	3.75	.50	3.18	1.11	3.24	.90
12. judge the worth of decisions made during your teaching	2.33	1.15	3.25	1.50	2.98	1.14	3.18	.95
14. make a commitment to experimenting with your own teaching behaviors	2.33	1.53	3.25	1.50	3.20	1.22	3.24	.97
17. generate alternative courses of action for your teaching	2.33	1.15	4.00	.82	3.02	1.14	3.18	1.07
20. decide which teaching acts and methods are effective for you in certain teaching situations	2.33	1.15	3.00	1.41	3.09	1.10	3.00	1.12
23. decide what you need to do to have future teaching success	2.67	1.53	3.00	1.41	3.07	1.18	3.18	1.01
29. think more about using what you learned during the lesson in future lessons	2.67	1.53	3.50	.58	3.07	1.17	3.00	1.06
32. plan future lesson strategies based on your analysis of previous lessons taught	3.00	1.73	3.75	.96	3.14	1.15	3.12	1.05
OVERALL	2.56	1.39	3.47	.87	3.06	1.09	3.12	.90

Overall Means for Years of Teaching Experience

In the overall rating (Table 19), teachers with 6-10, 11-20, and 21 or more years of teaching experience perceived cognitive coaching as having an average impact on thought processes in the four areas of planning, teaching, analyzing and evaluating, and applying. Teachers with less than 5 years of teaching experience perceived cognitive coaching as having a low impact on thought processes in planning and teaching, and an average imapct in analyzing and evaluating, and applying.

Table 19 Overall Means for Teachers' Responses about the Impact of Cognitive Coaching on Planning, Teaching, Analyzing and Evaluating, and Applying for Years of Teaching Experience

Thought Processes Phase	Less than 5 yrs. Mean	SD	6-10 yrs. Mean	SD	11-20 yrs. Mean	SD	21 yrs. or more Mean	SD
Planning	2.11	.97	3.36	1.01	2.93	1.06	3.07	.90
Teaching	2.04	.90	3.22	.97	2.87	1.01	3.12	.92
Analyzing and Evaluating	2.44	1.26	3.45	.89	3.18	1.10	3.16	.91
Applying	2.56	1.39	3.47	.87	3.06	1.09	3.12	.90

ANOVA for Years of Teaching Experience

The ANOVA for years of teaching experience was performed which indicated that the F score was not significant (Table 20) in teacher thought processes in planning, teaching, analyzing and evaluating, and applying. Therefore, the samples came from populations with the same mean, and the difference was attributable to sampling error. There was no difference in teacher perceptions of cognitive coaching among teachers with less than 5 years, 6-10 years, 11-20 years, and 21 or more years of teaching experience.

Table 20 ANOVA for Years of Teaching Experience

PLANNING

Source of Variation	Sum of Squares	DF	Mean Square	F	Sig. of F
Explained	3.052	3	1.017	.987	.405
Residual	68.052	66	1.031		
Total	71.104	69			

TEACHING

Source of Variation	Sum of Squares	DF	Mean Square	F	Sig. of F
Explained	3.53	3	1.18	1.22	.31
Residual	63.49	66	.96		
Total	67.02	69	.97		

ANALYZING AND EVALUATING

Source of Variation	Sum of Squares	DF	Mean Square	F	Sig. of F
Explained	1.89	3	.63	.57	.64
Residual	73.52	66	1.11		
Total	75.41	69	1.09		

APPLYING

Source of Variation	Sum of Squares	DF	Mean Square	F	Sig. of F
Explained	1.48	3	.49	.45	.72
Residual	72.27	66	1.10		
Total	73.75	69	1.07		

Research Question 8

Is there a difference in teacher perceptions about cognitive coaching among teachers who attended the two-day workshop and the five-day workshop in planning, teaching, analyzing and evaluating, and applying?

Data Related to Planning

In rating the extent of impact of cognitive coaching on teacher thought processes in the planning phase for workshop attended (Table 21), teachers who attended the five-day workshop perceived cognitive coaching as having an average impact on thought processes in planning in all nine items.

Teachers which attended the two-day workshop perceived cognitive coaching as having an average impact on thought processes in planning in eight of the items and a high impact in planning in the following item:

16. Extent cognitive coaching helped you to envision the student learnings that are to result from your instruction (mean=3.68).

In rating the overall means, teachers from the two-day workshop (mean=2.64) and the five-day workshop (mean=3.38) perceived cognitive coaching as having an average impact on thought processes in planning.

Table 2 1 Means of Teachers' Responses about the Impact of Cognitive Coaching on Planning for Workshop Attended

Item	2-Day Workshop Mean	2-Day Workshop SD	5-Day Workshop Mean	5-Day Workshop SD
To what extent has cognitive coaching helped you				
1. plan lessons	2.56	1.11	3.24	1.05
5. choose your teacher behaviors for the lesson during planning of the lesson	2.67	1.19	3.50	.93
6. envision the sequence of the lesson during planning	2.56	1.13	3.56	.93
13. think more when planning	2.90	1.27	3.50	.96
16. envision the student learnings that are to result from your instruction	3.68	1.08	3.47	1.05
19. see the relationship between your specific lesson and your long-range teaching goal	2.58	1.12	3.15	.89
28. plan how to assess the student learnings that will result from your instruction	2.58	1.06	3.32	1.01
31. plan the sequence of your lesson (what will happen first, second...)	2.75	1.24	3.29	1.03
34. decide on observable student behaviors that you want from the lesson	2.63	1.01	3.39	1.03
OVERALL	2.64	.98	3.38	.84

Data Related to Teaching

In rating the extent of impact of cognitive coaching on teacher thought processes in the teaching phase for workshop attended (Table 22), teachers who attended both the two-day workshop and five-day workshop perceived cognitive coaching as having an average impact on thought processes in planning in all nine items.

In the overall rating, teachers who attended the two-day workshop (mean=2.62) and the five-day workshop (mean=3.33) both perceived cognitive coaching as having an average impact on thought processes in teaching.

Table 22 Means of Teachers' Responses about the Impact of Cognitive Coaching on Teaching for Workshop Attended

Item	2-Day Workshop Mean	2-Day Workshop SD	5-Day Workshop Mean	5-Day Workshop SD
To what extent has cognitive coaching helped you				
2. teach lessons	2.67	1.11	3.50	.86
7. choose your teacher behavior during teaching of the lesson	2.64	1.06	3.47	.99
8. make decisions during teaching	2.45	1.09	3.38	.95
18. monitor your progress as far as implementing your lesson plan is concerned	2.69	1.18	3.35	.92
21. remember your teaching plan during the teaching	2.59	1.16	3.09	1.08
24. alter your teaching plan as needed based on the behavior of your students	2.69	1.18	3.29	1.00
26. think more during teaching	2.66	1.12	3.32	.98
33. become more aware of students' behavioral cues that they are with you or not with you	2.69	.97	3.35	1.04
35. use clear and precise language during teaching	2.78	1.01	3.18	1.03
OVERALL	2.62	.93	3.33	.84

Data Related to Analyzing and Evaluating

In rating the extent of impact of cognitive coaching on teacher thought processes in the analyzing and evaluating phase for workshop attended (Table 23), teachers who attended the two-day workshop perceived cognitive coaching as having an average impact on analyzing and evaluating in all nine items.

Teachers who attended the five-day workshop perceived cognitive coaching as having an average impact in six areas, and a high impact in these following items:

3. Extent cognitive coaching helped you with analyzing and evaluating lessons you have taught (mean=3.82).
9. Extent cognitive coaching helped you to think after your teaching about the lesson (mean=3.74).
27. Extent cognitive coaching helped you to self-evaluate your own actions during planning and teaching (mean=3.76).

In the overall rating, teachers who attended the two-day workshop (mean=2.84) and the five-day workshop (mean=3.59) both perceived cognitive coaching as having an average impact on thought processes in teaching.

Table 23 Means of Teachers' Responses about the Impact of Cognitive Coaching on Analyzing and Evaluating for Workshop Attended

Item	2-Day Workshop Mean	2-Day Workshop SD	5-Day Workshop Mean	5-Day Workshop SD
To what extent has cognitive coaching helped you				
3. analyze and evaluate	2.91	1.23	3.82	1.09
9. think after your teaching about the lesson	3.09	1.12	3.74	.93
10. evaluate your instruction by observing student behaviors	2.78	.94	3.65	.88
15. realize that you are in control of the learning that takes place	2.77	1.26	3.44	1.02
22. compare intended to actual student behavior	2.60	1.07	3.41	.99
25. remember student and teacher behavior from the teaching	2.74	1.00	3.33	1.02
27. self-evaluate your own actions during planning and teaching	3.16	1.32	3.76	1.07
30. think about your teaching behaviors	3.09	1.15	3.56	.93
36. analyze why objectives were or were not achieved during the lesson	2.91	1.15	3.56	1.02
OVERALL	2.84	1.01	3.59	.85

Data Related to Applying

In rating the extent of impact of cognitive coaching on teacher thought processes in the applying phase for workshop attended (Table 24), teachers who attended both the two-day workshop and five-day workshop perceived cognitive coaching as having an average impact on applying in all nine items.

In the overall rating, teachers who attended the two-day workshop (mean=2.8) and the five-day workshop (mean=3.47) both perceived cognitive coaching as having an average impact on thought processes in applying.

Table 24 Means of Teachers' Responses about the Impact of Cognitive Coaching on Applying for Workshop Attended

Item	2-Day Workshop Mean	2-Day Workshop SD	5-Day Workshop Mean	5-Day Workshop SD
To what extent has cognitive coaching helped you				
4. apply what you have learned in your teaching to future lessons	2.70	1.13	3.62	.99
11. think about alternative courses of action for your teaching	3.06	1.06	3.47	.90
12. judge the worth of decisions made during your teaching	2.78	1.13	3.32	.94
14. make a commitment to experimenting with your own teaching behaviors	2.81	1.20	3.65	.92
17. generate alternative courses of action for your teaching	2.81	1.03	3.47	1.05
20. decide which teaching acts and methods are effective for you in certain teaching situations	2.81	1.15	3.35	.95
23. decide what you need to do to have future teaching successes	2.91	1.25	3.35	.92
29. think more about using what you learned during the lesson in future lessons	2.81	1.11	3.38	.99
32. plan future lesson strategies based on your analysis of previous lessons taught	2.84	1.04	3.59	1.02
OVERALL	2.80	1.02	3.47	.85

Overall Means for Workshop Attended

In the overall rating, teachers who attended the two-day workshop and the five-day workshop perceived cognitive coaching as having an average impact on thought processes in the four areas of planning, teaching, analyzing and evaluating, and applying (Table 25).

Table 25 Overall Means of Teachers' Responses about the Impact of Cognitive Coaching on Planning, Teaching, Analyzing and Evaluating, and Applying for Workshop Attended

Thought Processes Phase	2-Day Workshop Mean	2-Day Workshop SD	5-Day Workshop Mean	5-Day Workshop SD
Planning	2.64	.98	3.38	.84
Teaching	2.62	.93	3.33	.84
Analyzing and Evaluating	2.84	1.01	3.59	.85
Applying	2.80	1.02	3.47	.85

Two Sample t-Test

The two sample t-test performed on workshop attended indicated statistical significance in all four areas of planning, teaching, analyzing and evaluating, and applying (Table 26). Therefore, samples came from populations with different means. There was a difference in teacher perceptions of cognitive coaching among teachers who attended the two-day workshop and the five-day workshop.

Table 26 Two Sample t-Test for Workshop Attended

Thought Processes Phase	T Value	P Value
Planning	-3.34	.001
Teaching	-3.29	.002
Analyzing and Evaluating	-3.28	.002
Applying	-2.93	.005

Research Question 9

Is there a difference in teacher perceptions about cognitive coaching among teachers who have had 0 conferences, 1-3 conferences, 4-6 conferences, or 7 or more conferences in planning, teaching, analyzing and evaluating, and applying?

Data Related to Planning

In rating the extent of impact of cognitive coaching on teacher thought processes in planning for number of conferences involved in since the training (Table 27), teachers who were involved in 4-6 conferences and 7 or more conferences rated cognitive coaching as having a high impact on planning in the following items:

Teachers who held 4-6 conferences:

5. choose your teacher behavior(s) for the lesson during the planning of the lesson (mean=3.89).
6. envision the sequence of the lesson during planning (mean=4.0).

Teachers who held 7 or more conferences:

1. plan lessons (mean=3.76).
5. choose your teacher behavior(s) for the lesson during the planning of the lesson (mean 3.94).
6. envision the sequence of the lesson during planning (mean=4.12).
13. think more when planning (mean=3.94)
16. envision the student learnings that are to result from your instruction (mean=3.88).
28. plan how to assess the student learnings that will result from your instruction (mean=3.76).

31. become more aware of students' behavioral cues that they are with you or not with you (mean=3.89).

34. decide on observable student behaviors that you want from the lesson (mean=3.82).

The ratings from teachers who held 1-3 conferences fall within the average impact range for all nine items.

The ratings from teachers who held 0 conferences fall within the low impact range for all nine items.

In the overall rating, teachers who held 7 or more conferences perceived cognitive coaching as having a high impact (mean=3.84), teachers who held 1-3 conferences (mean=2.9) and 4-6 conferences (mean=3.53) perceived cognitive coaching as having an average impact, and teachers who held 0 conferences (mean=2.02) perceived cognitive coaching as having a low impact on thought processes in planning.

Table 27 Means of Teachers' Responses about the Impact of Cognitive Coaching on Planning for Number of Conferences

Item	0 Conferences Mean	SD	1-3 Confs. Mean	SD	4-6 Confs. Mean	SD	7 or more Confs. Mean	SD
To what extent has cognitive coaching helped you								
1. plan lessons	1.83	.99	2.67	.82	3.67	1.22	3.76	.56
5. choose your teaching behaviors for the lesson during the planning of the lesson	2.06	1.11	2.92	.86	3.89	.78	3.94	.75
6. envision the sequence of the lesson during planning	2.00	.97	2.71	.75	4.00	.71	4.12	.60
13. think more when planning	2.13	1.20	3.24	.83	3.56	1.42	3.94	.66
16. envision the student learnings that are to result from your instruction	2.12	1.11	3.00	.78	3.44	1.13	3.88	.93
19. see the relationship between your specific lesson and your long-range teaching goal	2.00	1.00	2.83	.87	3.33	1.22	3.41	.71
28. plan how to assess the student learnings that will result from your instruction	2.12	.99	2.84	.85	3.25	.71	3.76	1.09
31. plan the sequence of your lesson (what will happen first, second...)	1.94	.97	2.92	.86	3.56	1.42	3.89	.70
34. decide on observable student behaviors that you want from the lesson	2.19	1.11	2.88	.88	3.22	1.20	3.82	.73
OVERALL	2.02	.91	2.90	.69	3.53	.90	3.84	.45

Data Related to Teaching

In rating the extent of impact of cognitive coaching on thought processes in teaching for number of conferences involved in since the training (Table 28), teachers who were involved in 4-6 conferences and 7 or more conferences rated cognitive coaching as having a high impact on teaching in the following items:

Teachers who held 4-6 conferences:

2. teach lessons (mean=3.89).

Teachers who held 7 or more conferences:

2. teach lessons (mean=3.82).

7. choose your teacher behavior during the teaching of the lesson (mean=3.76).

8. make decisions during teaching (mean=3.76).

18. monitor your own progress as far as implementing your lesson plan is concerned (mean=3.76).

21. remember your teaching plan during the teaching (mean=3.71).

33. become more aware of students' behavioral cues that they are with you or not with you (mean=3.82).

The ratings from teachers who held 1-3 conferences fall within the average impact range for all nine items.

The ratings from teachers who held 0 conferences fall within the low impact range for all nine items.

In the overall rating, teachers who held 7 or more conferences perceived cognitive coaching as having a high impact (mean=3.71), teachers who held 1-3 conferences (mean=2.89) and 4-6 conferences (mean=3.48) perceived cognitive coaching as having

an average impact, and teachers who held 0 conferences (mean=2.03) perceived cognitive coaching as having a low impact on thought processes in teaching.

Table 28 Means of Teachers' Responses about the Impact of Cognitive Coaching on Teaching for Number of Conferences

Item	0 Conferences Mean	SD	1-3 Confs. Mean	SD	4-6 Confs. Mean	SD	7 or more Confs. Mean	SD
To what extent has cognitive coaching helped you								
2. teach lessons	1.89	.96	3.00	.87	3.89	.78	3.82	.53
7. choose your teacher behavior during teaching of the lesson	2.22	1.11	2.88	.83	3.67	1.00	3.76	.90
8. make decisions during teaching	2.00	1.03	2.72	.94	3.67	.87	3.76	.75
18. monitor your progress as far as implementing your lesson plan is concerned	1.94	1.20	2.92	.81	3.56	1.13	3.76	.56
21. remember your teaching plan during the teaching from your instruction	2.12	1.11	2.72	1.02	2.89	1.05	3.71	.92
24. alter your teaching plan as needed based on the behavior of your students	2.12	1.11	2.92	.91	3.67	1.32	3.53	.80
26. think more during teaching	2.18	1.07	2.88	1.13	3.67	.87	3.53	.62
33. become more aware of students' behavioral cues that they are with you or not with you	2.12	.93	3.00	.96	3.11	.93	3.82	.73
35. use clear and precise language during teaching	2.06	.90	2.97	.84	3.22	1.20	3.65	.79
OVERALL	2.03	.88	2.89	.73	3.48	.88	3.71	.46

Data Related to Analyzing and Evaluating

In rating the extent of impact of cognitive coaching on thought processes in analyzing and evaluating for the number of conferences involved in since the training (Table 29), teachers who were involved in 7 or more conferences rated cognitive coaching as having a high impact on analyzing and evaluating in all nine items.

Teachers who were involved in 4-6 conferences rated cognitive coaching as having an average impact in five items, and a high impact in the following items:

3. analyze and evaluate lessons you have taught (mean=4.0).

9. think after your teaching about the lesson (mean=4.12).

27. self-evaluate your own actions during planning and teaching (mean=4.0).

30. think about your teaching behaviors (mean=4.0).

The ratings for teachers who held 1-3 conferences are within the average impact range for all nine items.

The ratings for teachers who held 0 conferences are within the average impact range for three items and the low impact range for the remaining six items.

In the overall ratings, teachers who held 7 or more conferences (mean=4.0) and 4-6 conferences (mean=3.72) perceived cognitive coaching as having a high impact, while teachers who held 1-3 conferences (mean=3.15) perceived cognitive coaching as having an average impact, and teachers who held 0 conferences (mean 2.21) perceived cognitive coaching as having a low impact on thought processes in analyzing and evaluating.

Table 29 Means of Teachers' Responses about the Impact of Cognitive Coaching on Analyzing and Evaluating for Number of Conferences

Item	O Conferences Mean	O Conferences SD	1-3 Confs. Mean	1-3 Confs. SD	4-6 Confs. Mean	4-6 Confs. SD	7 or more confs. Mean	7 or more confs. SD
To what extent has cognitive coaching helped you								
3. analyze and evaluate	2.22	1.22	3.24	1.01	4.00	.87	4.35	.70
9. think after your teaching about the lesson	2.47	1.07	3.24	.88	4.22	.83	4.12	.70
10. evaluate your instruction by observing student behaviors	2.35	1.11	3.16	.80	3.56	.53	3.94	.83
15. realize that you are in control of the learning that takes place	2.25	1.24	3.00	.96	3.44	1.13	3.82	1.01
22. compare intended to actual student behavior	2.19	1.05	2.88	1.01	3.50	.93	3.70	.85
25. remember student and teacher behavior from the teaching	2.00	.87	3.00	.87	3.63	.74	3.75	.86
27. self-evaluate your own actions during planning and teaching	2.29	1.16	3.40	1.00	4.00	1.32	4.29	.69
30. think about your teaching behaviors	2.41	1.18	3.28	.94	4.00	.87	3.88	.60
36. analyze why objectives were or were not achieved during the lesson	2.18	1.13	3.16	.85	3.44	1.24	4.12	.60
OVERALL	2.21	.98	3.15	.78	3.72	.81	4.00	.47

Data Related to Applying

In rating the extent of impact of cognitive coaching on thought processes in applying for number of conferences involved in since the training (Table 30), teachers who were involved in 7 or more conferences rated cognitive coaching as having a high impact on applying in all nine items.

Teachers who were involved in 4-6 conferences rated cognitive coaching as having an average impact in six items, and a high impact in the following items:

4. apply what you have learned in your teaching to future lessons (mean=4.0).
29. think more about using what you learned during the lesson in future lessons (mean=3.78).
32. plan future lesson strategies based on your analysis of previous lessons taught (mean=3.89).

The teachers who held 1-3 conferences rated cognitive coaching as having an average impact on applying for all nine items.

The teachers who held 0 conferences rated cognitive coaching as having a low impact on applying for all items except one (14. Extent cognitive coaching helped you to make a commitment to experimenting with your own teaching behaviors (mean=2.35)) which fell within the average impact range.

In the overall ratings, teachers who held 7 or more conferences (mean=3.94) perceived cognitive coaching as having a high impact, teachers who held 4-6 conferences (mean=3.64) and 1-3 conferences (mean=3.03) perceived cognitive coaching as having an average impact, and teachers who held 0 conferences (mean=2.16) perceived cognitive coaching as having a low impact on thought processes in applying.

Table 30 Means of Teachers' Responses about the Impact of Cognitive Coaching on Applying for Number of Conferences

Item	0 Conferences Mean	SD	1-3 Confs. Mean	SD	4-6 Confs. Mean	SD	7 or more Confs. Mean	SD
To what extent has cognitive coaching helped you								
4. apply what you have learned in your teaching to future lessons	2.17	1.15	2.96	.89	4.00	.71	4.00	.80
11. think about alternative courses of action for your teaching	2.25	1.06	3.32	.80	3.67	.87	3.82	.64
12. judge the worth of decisions made during your teaching	2.24	1.09	3.04	.89	3.22	1.20	3.76	.75
14. make a commitment to experimenting with your own teaching behaviors	2.35	1.06	2.96	.98	3.67	1.22	4.18	.53
17. generate alternative courses of action for your teaching	2.12	.99	2.88	.78	3.67	.71	4.18	.64
20. decide which teaching acts and methods are effective for you in certain teaching situations	2.24	1.09	3.00	.96	3.33	1.12	3.82	.64
23. decide what you need to do to have future teaching success	2.24	1.25	3.08	.95	3.56	1.24	3.76	.44
29. think more about using what you learned during the lesson in future lessons	2.06	1.03	3.04	.91	3.78	.67	3.82	.73
32. plan future lesson strategies based on your analysis of previous lessons taught	2.24	1.09	2.96	.86	3.89	.60	4.12	.60
OVERALL	2.16	1.02	3.03	.77	3.64	.75	3.94	.37

Overall Means for Number of Conferences Involved In

In the overall rating (Table 31), teachers who held 7 or more conferences perceived cognitive coaching as having a high impact on thought processes in planning, teaching, analyzing and evaluating, and applying. Teachers who held 4-6 conferences perceived cognitive coaching as having an average impact in planning, teaching, and applying, and perceived cognitive coaching as having a high impact in analyzing and evaluating. Teachers who held 1-3 conferences perceived cognitive coaching as having an average impact on thought processes in all four areas, and teachers who held 0 conferences perceived cognitive coaching as having a low impact on thought processes in all four areas.

Table 31 Overall Means for Teachers' Responses about the Impact of Cognitive Coaching on Planning, Teaching, Analyzing and Evaluating, and Applying for Number of Conferences

	0 Conferences		1-3 Confs.		4-6 Confs.		7 or more Confs.	
Thought Processes Phase	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Planning	2.02	.91	2.90	.69	3.53	.90	3.84	.45
Teaching	2.03	.88	2.89	.73	3.48	.88	3.71	.46
Analyzing and Evaluating	2.21	.98	3.15	.78	3.72	.81	4.00	.47
Applying	2.16	1.02	3.03	.77	3.64	.75	3.94	.37

ANOVA for Number of Conferences Involved In

ANOVA was performed for the number of conferences held in planning, teaching, analyzing and evaluating, and applying (Table 32) which showed statistical significance in all four areas. Therefore, samples came from populations with different means, and the number of conferences involved in made a difference in teacher perceptions of cognitive coaching.

Table 32 ANOVA for Number of Conferences Involved In

PLANNING

Source of Variation	Sum of Squares	DF	Mean Square	F	Sig. of F
Explained	32.07	3	10.69	19.76	.00
Residual	35.16	65	.54		
Total	67.23	68	.99		

TEACHING

Source of Variation	Sum of Squares	DF	Mean Square	F	Sig. of F
Explained	27.55	3	9.18	16.70	.00
Residual	35.75	65	.55		
Total	63.30	68			

ANALYZING AND EVALUATING

Source of Variation	Sum of Squares	DF	Mean Square	F	Sig. of F
Explained	31.06	3	10.35	16.98	.00
Residual	39.63	65	.61		
Total	70.69	68	1.04		

APPLYING

Source of Variation	Sum of Squares	DF	Mean Square	F	Sig. of F
Explained	30.67	3	10.22	17.17	.00
Residual	38.70	65	.60		
Total	69.37	68	1.02		

Research Question 10

Is there a difference in teacher perceptions about cognitive coaching among teachers who have been mostly conferenced by an administrator or mostly conferenced by a teacher in planning, teaching, analyzing and evaluating, and applying?

Data Related to Planning

In rating the extent of impact of cognitive coaching on teacher thought processes in planning for who the coach was for most conferences (Table 33), teachers who had a teacher for the coach for most conferences rated cognitive coaching as having an average impact on planning in all nine items.

Teachers who had an administrator for the coach for most conferences rated cognitive coaching as having an average impact in eight items, with a high impact in the following item:

16. Extent cognitive coaching helped you to envision the student learnings that are to result from your instruction (mean=3.75).

In the overall rating, teachers who had an administrator as the coach (mean=3.31) and a teacher as the coach (mean=3.23) perceived cognitive coaching as having an average impact on thought processes in planning.

Table 3 3 Means of Teachers' Responses about the Impact of Cognitive Coaching on Planning for Who the Coach Was for Most Conferences

Item	Administrator Mean	Administrator SD	Teacher Mean	Teacher SD
To what extent has cognitive coaching helped you				
1. plan lessons	3.00	.53	3.19	1.00
5. choose your teacher behaviors for the lesson during planning of the lesson	3.38	.52	3.33	1.03
6. envision the sequence of the lesson during planning	3.25	.89	3.31	1.06
13. think more when planning	3.50	.53	3.42	1.07
16. envision the student learnings that are to result from your instruction	3.75	.71	3.23	1.06
19. see the relationship between your specific lesson and your long-range teaching goal	3.25	1.04	3.04	.90
28. plan how to assess the student learnings that will result from your instruction	3.25	.71	3.13	1.04
31. plan the sequence of your lesson (what will happen first, second...)	3.13	.64	3.24	1.11
34. decide on observable student behaviors that you want from the lesson	3.25	.71	3.20	1.00
OVERALL	3.31	.52	3.23	.85

Data Related to Teaching

In rating the extent of impact of cognitive coaching on thought processes in teaching for who the coach was for most conferences (Table 34), teachers who had an administrator for the coach and teachers who had a teacher for the coach for most conferences both rated cognitive coaching as having an average impact on teaching in all nine items.

In the overall rating, teachers who had an administrator for the coach (mean (3.25) and a teacher for the coach (mean=3.2) perceived cognitive coaching as having an average impact on thought processes in teaching.

Table 34 Means of Teachers' Responses about the Impact of Cognitive Coaching on Teaching for Who the Coach Was for Most Conferences

Item	Administrator Mean	Administrator SD	Teacher Mean	Teacher SD
To what extent has cognitive coaching helped you				
2. teach lessons	3.38	.52	3.33	.92
7. choose your teacher behavior during teaching of the lesson	3.38	.74	3.22	1.03
8. make decisions during teaching	3.25	.89	3.12	1.03
18. monitor your progress as far as implementing your lesson plan is concerned	3.38	.52	3.24	.99
21. remember your teaching plan during the teaching	3.00	1.07	3.08	1.04
24. alter your teaching plan as needed based on the behavior of your students	3.25	.89	3.18	1.01
26. think more during teaching	3.38	1.19	3.16	.96
33. become more aware of students' behavioral cues that they are with you or not with you	3.13	.83	3.22	.96
35. use clear and precise language during teaching	3.13	.64	3.18	.95
OVERALL	3.25	.63	3.2	.79

Data Related to Analyzing and Evaluating

In rating the extent of impact of cognitive coaching on thought processes in analyzing and evaluating for who the coach was for most conferences (Table 35), teachers who had a teacher for the coach for most conferences rated cognitive coaching as having an average impact on analyzing and evaluating in all nine items.

Teachers who had an administrator for the coach rated cognitive coaching as having an average impact in eight items, and a high impact in the following item:

27. Extent cognitive coaching helped you to self-evaluate your own actions during planning and teaching (mean=3.88).

In the overall rating, teachers who had an administrator for the coach (mean=3.42) and a teacher for the coach (mean=3.46) perceived cognitive coaching as having an average impact on thought processes in analyzing and evaluating.

Table 35 Means of Teachers' Responses about the Impact of Cognitive Coaching on Analyzing and Evaluating for Who the Coach Was for Most Conferences

Item	Administrator Mean	Administrator SD	Teacher Mean	Teacher SD
To what extent has cognitive coaching helped you				
3. analyze and evaluate	3.50	.76	3.67	1.09
9. think after your teaching about the lesson	3.50	.76	3.61	1.00
10. evaluate your instruction by observing student behaviors	3.25	1.04	3.41	.84
15. realize that you are in control of the learning that takes place	3.63	.92	3.27	1.11
22. compare intended to actual student behavior	3.00	.93	3.26	1.01
25. remember student and teacher behavior from the teaching	3.13	.83	3.26	.94
27. self-evaluate your own actions during planning and teaching	3.88	.99	3.67	1.07
30. think about your teaching behaviors	3.50	.76	3.55	.89
36. analyze why objectives were or were not achieved during the lesson	3.38	.74	3.45	1.00
OVERALL	3.42	.62	3.46	.83

Data Related to Applying

In rating the extent of impact of cognitive coaching on thought processes in applying for who the coach was for most conferences (Table 36), teachers who had a teacher for the coach for most conferences rated cognitive coaching as having an average impact on applying in all nine items.

Teachers who had an administrator for the coach rated cognitive coaching as having an average impact in eight items, and a high impact in the following item:

20. Extent cognitive coaching helped you to decide which teaching acts and methods are effective for you in certain teaching situations (mean=3.75).

In the overall rating, teachers who had an administrator for the coach (mean=3.47) and a teacher for the coach (mean=3.36) perceived cognitive coaching as having an average impact on thought processes in applying.

Table 36 Means of Teachers' Responses about the Impact of Cognitive Coaching on Applying for Who the Coach Was for Most Conferences

Item	Administrator Mean	Administrator SD	Teacher Mean	Teacher SD
To what extent has cognitive coaching helped you				
4. apply what you have learned in your teaching to future lessons	3.50	.53	3.39	1.04
11. think about alternative courses of action for your teaching	3.50	.53	3.50	.80
12. judge the worth of decisions made during your teaching	3.38	.52	3.25	.99
14. make a commitment to experimenting with your own teaching behaviors	3.50	.76	3.41	1.08
17. generate alternative courses of action for your teaching	3.38	.52	3.37	.99
20. decide which teaching acts and methods are effective for you in certain teaching situations	3.75	.71	3.22	.96
23. decide what you need to do to have future teaching successes	3.38	.74	3.37	.97
29. think more about using what you learned during the lesson in future lessons	3.38	.74	3.31	.97
32. plan future lesson strategies based on your analysis of previous lessons taught	3.50	.76	3.42	.96
OVERALL	3.47	.48	3.36	.82

Overall Means for Who the Coach Was for Most Conferences

In the overall rating (Table 37), teachers who had an administrator for the coach and teachers who had a teacher for the coach perceived cognitive coaching as having an average impact on thought processes in the four areas of planning, teaching, analyzing and evaluating, and applying.

Table 37 Overall Means of Teachers' Responses about the Impact of Cognitive Coaching on Planning, Teaching, Analyzing and Evaluating, and Applying for Who the Coach Was for Most Conferences

	Administrator		Teacher	
Thought Processes Phase	Mean	SD	Mean	SD
Planning	3.31	.52	3.23	.85
Teaching	3.25	.63	3.20	.79
Analyzing and Evaluating	3.42	.62	3.46	.83
Applying	3.47	.48	3.36	.82

Two Sample t-Test

The two sample t-test performed on who the coach was for most conferences indicated that the means were not statistically significant (Table 38) in all four areas of planning, teaching, analyzing and evaluating, and applying. Therefore, samples came from populations with the same mean, and who the coach was had no effect. There was no difference in teacher perceptions of cognitive coaching for who the coach was for most conferences.

Table 38 Two Sample t-Test on Who the Coach Was for Most Conferences

Thought Processes Phase	T Value	P Value
Planning	.23	.82
Teaching	.19	.85
Analyzing and Evaluating	-.13	.89
Applying	.37	.71

Summary

The purpose of this study was to examine the extent to which cognitive coaching affected teachers' thought processes as perceived by cognitively coached teachers in the Plymouth-Canton Community School District. The four categories of teacher thought processes examined were: planning, teaching, analyzing and evaluating, and applying.

All Plymouth-Canton Community School District teachers who received cognitive coaching training in 1987 and 1988 were asked to complete the Teacher Thought Processes Questionnaire which measured their perceptions of cognitive coaching.

Mean and standard deviation were used to interpret the data from the rating scale of 1 to 5 (Table 39). The means between 1 and 2.33 were interpreted as cognitive coaching having a low impact on teacher thought processes, the means between 2.34 and 3.67 were interpreted as cognitive coaching having an average impact on teacher thought processes, and the means between 3.68 and 5 were interpreted as cognitive coaching having a high impact on teacher thought processes. T-tests and ANOVA were computed for the areas where two or more samples were studied.

Teachers rated cognitive coaching as having an average impact on teacher thought processes in all four areas of planning, teaching, analyzing and evaluating, and applying.

Elementary and secondary teachers both rated cognitive coaching as having an average impact on teacher thought processes in the four areas of planning, teaching, analyzing and evaluating, and applying.

Teachers with less than 5 years of teaching experience rated cognitive coaching as having a low impact on thought processes in planning and teaching, while teachers with 6-10, 11-20, and 21 or more years of teaching experience rated cognitive coaching as having an average impact on thought processes in planning and teaching.

Teachers with less than 5 years, 6-10, 11-20, and 21 or more years of teaching experience all rated cognitive coaching as having an average impact on thought processes in analyzing and evaluating, and applying.

Teachers who received the two-day workshop training and five-day training both rated cognitive coaching as having an average impact on teacher thought processes in the four areas of teaching, planning, analyzing and evaluating, and applying. The two sample t-test showed statistical significance of the means in all four areas.

Teachers who were involved in seven or more conferences rated cognitive coaching as having a high impact on thought processes in all four areas of planning, teaching, analyzing and evaluating, and applying. Teachers who held 4-6 conferences rated cognitive coaching as having an average impact on thought processes in planning, teaching, and applying, with a high impact on thought processes in analyzing and evaluating. Teachers who held 1-3 conferences rated cognitive coaching as having an average impact on thought processes in all four areas. Teachers who held 0 conferences rated cognitive coaching as having a low impact on thought processes in all four areas of planning, teaching, analyzing and evaluating, and applying.

Teachers who had an administrator as the coach for most conferences and a teacher as the coach for most conferences both rated cognitive coaching as having an average impact on thought processes in all four areas of planning, teaching, analyzing and evaluating, and applying.

Table 39 Means of Teachers' Responses to the Teacher Thought Processes Questionnaire

	Teaching Level				Years of Teaching Experience						Workshop Attended				Number of Conferences Involved In						Who the Coach Was For Most Conferences					
Thought Processes	Elementary		Secondary		Less than 5		6 -10		11-20		21/more		2-Day		5-Day		0 Conf.		1-3 Conf.		4-6 Conf.		7/more		Adminis.		Teacher		Overall	
Phase	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Planning	2.99	1.00	2.87	1.07	2.11	.97	3.36	1.01	2.93	1.06	3.07	.90	2.64	.98	3.38	.84	2.02	.91	2.90	.69	3.53	.90	3.84	.45	3.31	.52	3.23	.85	2.96	1.02
Teaching	2.96	.97	2.79	1.04	2.04	.90	3.22	.97	2.87	1.01	3.12	.92	2.62	.93	3.33	.84	2.03	.88	2.89	.73	3.48	.86	3.71	.46	3.25	.63	3.20	.79	2.92	.99
Analyzing & Evaluating	3.20	1.06	3.05	1.02	2.44	1.26	3.45	.89	3.18	1.10	3.16	.91	2.84	1.01	3.59	.85	2.21	.98	3.15	.78	3.72	.81	4.00	.47	3.42	.82	3.46	.83	3.16	1.05
Applying	3.14	1.04	2.92	1.02	2.56	1.39	3.47	.87	3.06	1.09	3.12	.90	2.80	1.02	3.47	.85	2.16	1.02	3.03	.77	3.64	.75	3.94	.37	3.47	.48	3.36	.82	3.06	1.03

CHAPTER V

SUMMARY, FINDINGS, RECOMMENDATIONS, AND SUGGESTIONS FOR FURTHER RESEARCH

This chapter includes a summary of the study, a discussion of the findings including their implications, recommendations, and suggestions for further research.

Summary

The purpose of this study was to examine the extent to which cognitive coaching has affected teachers' thought processes as perceived by cognitively coached teachers in the Plymouth-Canton Community School District. This was measured by the Teacher Thought Processes Questionnaire which was based on Costa and Garmston's "Some Indicators of Intellectual Autonomy" (1985), "Survey of Organizations 2000" by Rensis Likert Associates, Inc. (1988), and teacher observations. The four categories of teacher thought processes examined were: planning, teaching, analyzing and evaluating, and applying.

The literature was reviewed to include teaching as decision making, teacher thought processes, supervision, and coaching.

Design of the Study

The population consisted of Plymouth-Canton Community School District teachers who received the cognitive coaching training in 1987 and 1988, and were employed in the district in 1989. These eighty-seven cognitively coached teachers

received the questionnaire and seventy (80% return) chose to complete the Teacher Thought Processes Questionnaire which measured their perceptions about cognitive coaching on thought processes in the four areas of planning, teaching, analyzing and evaluating, and applying. The Statistical Package for the Social Sciences was used to compute the mean and standard deviation for the teachers' responses. T-tests and analysis of variance were computed to study how different groups perceived cognitive coaching.

Findings

Research Question 1:

To what extent do teachers perceive cognitive coaching as affecting their thought processes in the planning phase of teaching?

Teachers perceived cognitive coaching as having an average impact on teacher thought processes in the planning phase.

Discussion:

Decisions made during planning are thought to be the most important as compared to the other phases of teaching, analyzing and evaluating, and applying, since all other decisions rest upon the decisions made in the planning stage (Shavelson, 1976). The data showed that teachers perceived cognitive coaching as having an average impact on planning. This average impact on planning would appear to make a related impact on teaching, analyzing and evaluating, and applying, since these decisions all rest upon the planning decisions.

Planning has the advantage of time over the teaching itself, since teachers may take as much time as they choose to plan lessons, while the teaching is restricted to the length of the class period. The cognitive coaching conferencing model stresses the importance of the planning stage in the pre-teaching conference by having the teacher clarify goals and objectives for the lesson, describe specific observable student and teacher behaviors, describe the sequence of the lesson, and procedures for assessing the learning. Since planning includes describing student learning that will result from the instruction, identifying students' entry knowledge or capabilities, planning of the instructional sequence that will result in the desired student outcome, and deciding on a method for evaluating the outcome (Shavelson, 1976; Shavelson and Stern, 1981; Costa and Garmston, 1985), it is understandable that cognitive coaching has made an impact on planning. The pre-teaching conference goals match directly with the elements of teacher planning.

Cognitive coaching was rated as having an average impact on all nine items related to planning. This consistency appears to be due to the match between the elements of planning and the goals of the preobservation conference in cognitive coaching.

Research Question 2:

To what extent do teachers perceive cognitive coaching as affecting their thought processes in the teaching phase?

Teachers perceived cognitive coaching as having an average impact on teacher thought processes in the teaching phase.

Discussion:

The teaching phase includes decisions made while the teacher is interacting with students. These decisions are both planned and spontaneous.

It is interesting to note that the teachers rated cognitive coaching as having an average impact on teaching for all nine items. A contributing factor to this consistency is that some teaching decisions are planned, and cognitive coaching was found to have an average impact on planning which relates to the planned teaching decisions and the fact that teaching is the act of following the plan. Another contributing factor to this consistency is that the decision steps in the planning phase are similar to the decisions in the teaching phase, but the teaching phase makes modifications of the plan spontaneously (Costa and Garmston, 1985).

Teachers keep their teaching plan in their memory while teaching, and they must constantly monitor where they are and where the students are as compared to the original plan as they make spur of the moment decisions. Teaching was described by O.J. Harvey (1966) as the second most stressful profession due to this constant pressure of making decisions.

Research Question 3:

To what extent do teachers perceive cognitive coaching as affecting their thought processes in the analyzing and evaluating phase of teaching?

Teachers perceived cognitive coaching as having an average impact on teacher thought processes in the analyzing and evaluating phase.

Discussion:

Shavelson (1976) describes evaluation as using the information about actual versus intended outcomes to judge the worth of prior decisions as well as to make current and future decisions. This description assists in understanding why cognitive coaching was shown to have an average impact on analyzing and evaluating. Cognitive coaching was also shown as having an average impact on planning and teaching. The planning phase deals with the plan for the intended outcome and the teaching phase deals with the actual outcome. Since there was an average impact in both phases, it follows that the analyzing and evaluating phase which uses the information about actual versus intended outcomes to make a judgment would also indicate cognitive coaching as having an average impact.

In the postobservation conference of the cognitive coaching model, the teacher is asked to recall student and teacher behaviors and to compare these behaviors with the intended behaviors. Eliciting these responses forces the teacher to make comparisons for this analyzing and evaluating phase.

Research Question 4:

To what extent do teachers perceive cognitive coaching as affecting their thought processes in the applying phase of teaching?

Teachers perceived cognitive coaching as having an average impact on teacher thought processes in the applying phase.

Discussion:

The applying phase involves learning from prior experience. Teachers make decisions about future actions as a result of analyzing and evaluating (Costa and Garmston, 1985). In the cognitive coaching model, the teacher is asked to prescribe what he/she will do differently in future lessons based on the analysis of the lesson. This elicits a thoughtful response from the teacher which draws upon the analyzing and evaluating phase. Since cognitive coaching was perceived as having an average impact on analyzing and evaluating, it follows that an average impact would appear to be perceived for the applying phase.

Concepts and relationships discovered by the teacher in the applying phase can then be used in the planning and teaching phases. This demonstrates the cyclical nature of teaching and the importance of cognitive coaching to the commitment of change and self-analysis.

Research Question 5:

Do teachers perceive cognitive coaching as affecting their thought processes in planning, teaching, analyzing and evaluating, and applying to the same extent?

Teachers perceived cognitive coaching as having an average impact on thought processes in all four areas of planning, teaching, analyzing and evaluating, and applying.

Discussion:

It is necessary to look at the planning phase, the cyclical nature of teaching, and the cognitive coaching model to understand why cognitive coaching was perceived by

teachers to have an average impact on planning, teaching, analyzing and evaluating, and applying.

Shavelson (1976) and Costa and Garmston (1985) describe the four phases of teacher decision making with respective thought processes as planning, teaching, analyzing and evaluating, and applying. Planning is considered to include the most important teaching decisions because the other three phases (teaching, analyzing and evaluating, and applying) build upon it. Therefore, the average impact of cognitive coaching on planning relates to the average impact on teaching, analyzing and evaluating, and applying.

After a teacher makes a plan, the plan is put into action during the teaching. After the teacher implements the plan, the teacher compares the intended outcome to the actual outcome. The teacher then uses this comparison to make decisions about future teaching decisions, which means devising a new plan to be implemented, analyzed, and applied. In this manner, the cycle of planning, teaching, analyzing and evaluating, and applying continues. Therefore, one phase relates to the next, and the average impact of cognitive coaching on one phase is transferred to the next phase.

The cognitive coaching model addresses all four of these phases. In the preobservation conference, the teacher describes the teaching plan. Next, the teacher puts the plan into action during the teaching with the conferencer (coach) observing. During the postobservation conference, the teacher compares the intended to the actual teaching outcome and prescribes what will be done differently in future lessons. This emphasis on all four phases also helps to understand the consistent "average impact" perception of the teachers for planning, teaching, analyzing and evaluating, and applying.

Research Question 6:

Is there a difference in teacher perceptions about cognitive coaching among elementary and secondary teachers in planning, teaching, analyzing and evaluating, and applying?

Elementary and secondary teachers both perceived cognitive coaching as having an average impact on teacher thought processes in the four areas of planning, teaching, analyzing and evaluating, and applying.

Discussion:

Staff development trainers may be enthused with this equal impact of cognitive coaching training among elementary and secondary teachers. Usually, more elementary teachers volunteer for training than do secondary teachers in the instructional skills and conferencing staff development projects and may be generally more positive about the training received and its practical use.

In this study, fifty of the teachers taught at the elementary level, and twenty taught at the secondary level. This equal impact finding among elementary and secondary teachers may be due to the training itself, or the manner in which teachers were chosen to participate in the training.

The cognitive coaching training was held off school property with non-district trainers. The training took the form of information-giving, modeling of the skill, discussion, and practice of the skill. The teachers were addressed and treated as professional decision makers.

For the five-day training, administrators chose teachers who they felt comfortable with to participate. Many of these teachers had been involved in an administrative internship program within the district. For the two-day training, administrators asked

teachers who they felt were responsive to developing collegial relationships and had experienced instructional skills conferencing to participate.

Research Question 7:

Is there a difference in teacher perceptions of cognitive coaching among teachers with less than 5 years, 6-10 years, 11-20 years, or 21 years or more of teaching experience in planning, teaching, analyzing and evaluating, and applying?

Teachers with 6-10, 11-20, and 21 or more years of teaching experience perceived cognitive coaching as having an average impact on thought processes in all four areas of planning, teaching, analyzing and evaluating, and applying. Teachers with less than 5 years of teaching experience perceived cognitive coaching as having a low impact on thought processes in planning and teaching, and an average impact in analyzing and evaluating, and applying.

Discussion:

Teachers with less than 5 years of teaching experience perceived cognitive coaching as having a low impact on planning and teaching, yet an average impact on analyzing and evaluating, and applying. Doyle (1979) describes inexperienced teachers as being stressed and appearing to have a small repertoire of teaching strategies. This may relate to a limited background of teaching experiences on which to build new plans with new teaching behaviors and strategies. This may make teachers with less than five years of teaching experience perceive cognitive coaching as having a low impact in planning and teaching. Analyzing and evaluating, and applying received a higher rating which may be due to the thinking about the intended versus the actual teaching outcome and how it would be applied in the future.

Teachers with 6-10, 11-20, and 21 or more years of teaching experience perceived cognitive coaching as having an average impact on thought processes in all four phases of planning, teaching, analyzing and evaluating, and applying. Fischler (1971) describes more experienced teachers as having a greater repertoire of teacher behaviors, and being more apt to select a teaching strategy which is most effective for the teaching situation. These more experienced teachers have a larger repertoire from which to develop plans and teaching behaviors and strategies.

Research Question 8:

Is there a difference in teacher perceptions about cognitive coaching among teachers who attended the two-day workshop and the five-day workshop in planning, teaching, analyzing and evaluating, and applying?

Teachers who received the two-day workshop training and the five-day workshop training both perceived cognitive coaching as having an average impact on teacher thought processes in the four areas of planning, teaching, analyzing and evaluating, and applying. The two sample t-test showed statistical significance of the means in all four areas, which indicated that the samples came from populations with different means.

Discussion:

Both the two-day training participants and the five-day training participants perceived cognitive coaching as having an average impact on teacher thought processes in the four areas of planning, teaching, analyzing and evaluating, and applying.

The two sample t-test performed on workshop attended, however, indicated statistical significance in all four areas of planning, teaching, analyzing and evaluating, and

applying. Statistically speaking, this means that the samples came from populations with different means, and that the workshop attended had an effect.

Looking at these results in a practical manner indicates that both the two-day workshop teachers and the five-day workshop teachers perceived cognitive coaching as having a similar average impact effect on thought processes in planning, teaching, analyzing and evaluating, and applying. This would suggest that there would be no justification for teachers to receive the five-day training over the two-day training in terms of cognitive coaching's impact on thought processes.

Williams (1982) describes teachers as learning and growing when they focus on a "technical core" of activity. The two-day workshop appears to focus on the "technical core" of cognitive coaching as well as the five-day workshop related to its impact on teacher thought processes.

Teachers who attended the five-day workshop perceived cognitive coaching as having a high impact on three items dealing with thought processes in the analyzing and evaluating phase as compared to no high impact ratings by teachers who received the two day training workshop. This appears to indicate that the five-day workshop addressed and/or spent more time on the analyzing and evaluating portion of the postobservation conference.

Research Question 9:

Is there a difference in the teacher perceptions about cognitive coaching among teachers who have had 0 conferences, 1-3 conferences, 4-6 conferences, or 7 or more conferences in planning, teaching, analyzing and evaluating, and applying?

Teachers who held seven or more conferences perceived cognitive coaching as having a high impact on thought processes in all four areas of planning, teaching,

analyzing and evaluating, and applying. Teachers who held 4-6 conferences perceived cognitive coaching as having an average impact on thought processes in planning, teaching, and applying, with a high impact on thought processes in analyzing and evaluating. Teachers who held 1-3 conferences perceived cognitive coaching as having an average impact on thought processes in all four areas of planning, teaching, analyzing and evaluating, and applying. Teachers who held 0 conferences perceived cognitive coaching as having a low impact on thought processes in all four areas of planning, teaching, analyzing and evaluating, and applying.

Discussion:

These results demonstrate the positive relationship between the number of conferences involved in and teachers' perception of cognitive coaching's impact on teacher thought processes. As teachers were involved in more conferences, the level of cognitive coaching's impact on thought processes, as perceived by teachers, also increased. This finding further supports research by Joyce and Showers (1983), Shaver, Davis, and Helburn (1978), and Weiss (1978) which showed that the transfer of new teaching strategies and skills requires substantial training.

These results also match research by Showers (1982, 1984) and Baker (1983) which indicated that coached teachers usually practice and develop new skills to a greater degree than do uncoached teachers who have had the same initial training.

Research Question 10:

Is there a difference in the teacher perceptions about cognitive coaching among teachers who have been mostly conferenced by an administrator or mostly conferenced by a teacher in planning, teaching, analyzing and evaluating, and applying?

Teachers who were mostly conferenced by an administrator and teachers who were mostly conferenced by a teacher both rated cognitive coaching as having an average impact on thought processes in all four areas of planning, teaching, analyzing and evaluating, and applying.

Discussion:

These results indicate that administrator or teacher as conferencer for most conferences made no difference in the impact of cognitive coaching on thought processes in planning, teaching, analyzing and evaluating, and applying. This finding suggests that cognitive coaching is a non-threatening, support-inducing form of supervision, since teachers who had an administrator as the conferencer and teachers who had a teacher as the conferencer both perceived cognitive coaching as having an average impact on thought processes.

Cognitive coaching is thought to be a non-threatening supervision model since the teacher is never told what he/she should have done in the teaching. The conferencer's role in cognitive coaching is to provide non-judgmental feedback by asking questions, listening, and paraphrasing while clarifying.

In support of cognitive coaching as being a non-threatening supervision model are Blumberg's studies (1974) which showed that teachers reported supervisory behavior as non-threatening and support-inducing when supervisors listened, encouraged, and clarified teachers' own ideas.

It should be noted that teachers who had an administrator for the coach for most conferences was a smaller sample than teachers who had a teacher for the coach.

Conclusions

The conclusions of this study, based on the data, are as follows:

1. Teachers perceived cognitive coaching as having an average impact on teacher thought processes in all four areas of planning, teaching, analyzing and evaluating, and applying.
2. Teachers at the elementary and secondary levels both perceived cognitive coaching as having an average impact on teacher thought processes in all four areas of planning, teaching, analyzing and evaluating, and applying.
3. Teachers with 6-10, 11-20, and 21 or more years of teaching experience perceived cognitive coaching as having an average impact on thought processes in all four areas of planning, teaching, analyzing and evaluating, and applying. Teachers with less than 5 years of teaching experience perceived cognitive coaching as having a low impact on thought processes in planning and teaching, and an average impact in analyzing and evaluating, and applying.
4. Teachers who received the two-day workshop training and the five-day workshop training both perceived cognitive coaching as having an average impact on teacher thought processes in all four areas of planning, teaching, analyzing and evaluating, and applying.
5. Teachers who held seven or more conferences perceived cognitive coaching as having a high impact on thought processes in all four areas of planning, teaching, analyzing and evaluating, and applying. Teachers who held 4-6 conferences perceived cognitive coaching as having an average impact on thought processes in planning, teaching, and applying, with a high impact on thought processes in analyzing and evaluating. Teachers who held 1-3

conferences perceived cognitive coaching as having an average impact on thought processes in all four areas of planning, teaching, analyzing and evaluating, and applying. Teachers who held 0 conferences perceived cognitive coaching as having a low impact on thought processes in all four areas of planning, teaching, analyzing and evaluating, and applying.

6. Teachers who were mostly conferenced by an administrator and teachers who were mostly conferenced by a teacher both rated cognitive coaching as having an average impact on thought processes in all four areas of planning, teaching, analyzing and evaluating, and applying.

Recommendations

The following recommendations are based on the findings of this study.

1. This study found that teachers with less than 5 years of teaching experience perceived cognitive coaching as having a low impact on planning and teaching, yet an average impact on analyzing and evaluating, and applying. It is recommended that teachers with less than 5 years of teaching experience receive specific training in planning strategies and various teaching behaviors prior to receiving the cognitive coaching training, and this may be included as part of a program for new teachers.
2. This study found that teachers who received the two-day workshop training and the five-day workshop training both perceived cognitive coaching as having an average impact on teacher thought processes. It is recommended that only the two-day cognitive coaching training session be offered. This would save the district consultant fees, and substitute wages to give teachers released-time for the training. Students would also benefit with

three extra days of instruction from their teacher, instead of being taught by the substitute.

3. This study found that teachers who held seven or more conferences perceived cognitive coaching as having a high impact on thought processes as compared to teachers who held less than seven conferences perceived cognitive coaching as having an average or low impact on thought processes. It is recommended that teachers be encouraged to become involved in at least seven conferences following the formal cognitive coaching training.
4. This study found that teachers who have been mostly conferenced by an administrator and teachers who have been mostly conferenced by a teacher both rated cognitive coaching as having an average impact on thought processes. It is recommended that administrators use a non-threatening model like the cognitive coaching model of supervision rather than other models which may be perceived as threatening by teachers.

Suggestions for Further Research

The following are suggestions for further research:

1. An experimental study should be done with randomly selected teachers for the control and experimental groups to determine if cognitive coaching makes a difference in teacher thought processes. The experimental group would receive the cognitive coaching training.
2. A comparison study should be done using the Teacher Thought Processes Questionnaire with teachers from another district who received cognitive coaching training to determine if cognitive coaching has affected teacher thought processes in another district similarly.

3. A follow-up study should be done two to five years after the cognitive coaching training, and the results should be compared to the results of this study to determine if cognitive coaching continues to have an effect on teacher thought processes.
4. A comparison study should be done immediately following the training and one year after the training to determine if teachers perceive cognitive coaching as having more of an impact immediately after the training or one year later.
5. A study should be done comparing the cognitive coaching model and its impact on teacher thought processes with the Hunter model to determine which model has more of an impact on teacher thought processes.
6. A study should be done comparing the achievement of cognitively coached teachers' students to the achievement of non-coached teachers' students to see if cognitive coaching makes a difference related to student achievement.
7. A study should be done to examine to what extent teachers engage in autonomous thought as a direct result of cognitive coaching.
8. A study should be done with administrators' perceptions of the impact of cognitive coaching on teacher thought processes to determine if they perceive cognitive coaching as having a similar effect on thought processes as their teachers, since the administrator is responsible for instructional leadership.
9. A study should be done comparing several districts to determine if the length of the cognitive coaching training makes a difference in its impact on thought processes, and to determine if an administrator as the coach or

teacher as the coach makes a difference in cognitive coaching's impact on thought processes.

10. A study should be done, modifying the Teacher Thought Processes Questionnaire, to determine if peer coaching is perceived as having an impact on teacher thought processes.

Reflections

Cognitive coaching is a non-threatening clinical supervision model. The coach in this model uses a questioning and paraphrasing strategy which helps the teacher clarify and refine the thought processes behind the teaching. The teacher is regarded as having a mind of his/her own and is never told what should have been done. The cognitive coach sees the teacher as an important participant in the process.

Based on the fact that this study found cognitive coaching as having an average impact on teacher thought processes in all four areas, it is suggested that an experimental study be conducted with randomly selected teachers for the control and experimental groups to determine if cognitive coaching makes a difference in teacher thought processes. A study should also be done comparing the achievement of cognitively coached teachers' students to the achievement of non-coached teachers' students to see if cognitive coaching makes a difference related to student achievement.

APPENDICES

APPENDIX A

LETTERS

APPENDIX A

Letter to Rensis Likert Associates Requesting Permission to Use Scaling Format

October 5, 1988

Ms. Colleena C. Logan
Associate
Rensis Likert Associates, Inc.
Suite 401 Wolverine Tower
3001 S. State Street
Ann Arbor, MI 48108-9990

Dear Ms. Logan:

I enjoyed talking with you today.

Enclosed is the questionnaire I have devised for use in my dissertation. As we discussed, I would like written permission to use the "To what extent" and scaling format from your "Survey of Organizations 2000." Please note that the content of questions is very different.

Thanks so much for your assistance.

Sincerely,

Norma J. Foster

Norma J. Foster

RLA Rensis Likert Associates, Inc.
Consultants in Organization Diagnosis and Human Resource Development

October 10, 1988

Ms. Norma J. Foster
44490 Clare Boulevard
Plymouth, MI 48170

Dear Ms. Foster:

I have received the copy of your questionnaire and I appreciate your promptness.

I am also writing, in behalf of Rensis Likert Associates, to grant you permission to use the scale as it appears in the SOO-2000 questionnaire. This permission is granted for this project only. Separate permission would be required for further use of portions or all of the SOO-2000 questionnaire.

I wish you well in your endeavors.

Sincerely,

Colleena C. Logan

Colleena C. Logan
Associate

Suite 401 Wolverine Tower, 3001 S. State Street, Ann Arbor, Michigan 48104-7352 • (313) 769-1980

APPENDIX A

Letter to Panel Requesting Assistance to Determine Validity and Clarity of the Questionnaire

December 11, 1988

Dr. William Pearson
Principal
Hoben Elementary
Canton, MI 48187

Dear Bill:

Enclosed is the questionnaire I will be using in my dissertation. I have developed it to examine the relationship between cognitive coaching and teacher thought processes as perceived by elementary and secondary teachers in the Plymouth-Canton Community School District. Several sources have been used to put this questionnaire together (Costa and Garmston (1985), Likert (1988), Shavelson (1976), and teacher comments).

I need your assistance to help me determine the validity of this instrument. Please read each question and mark on the questionnaire in the appropriate column whether you feel it is valid or not valid as related to teacher thought processes. Please write in comments as to the clarity of the items, also.

Please return the questionnaire to me at Gallimore by Thursday, December 22.

Thanks so much for your time and assistance!

Sincerely,

Norma J. Foster

Norma J. Foster

APPENDIX A

Letter to Teachers Requesting Assistance for the Pilot Study and to Determine the Clarity of Items

December 11, 1988

Dear

Attached is a questionnaire I have developed to examine the relationship between cognitive coaching and teacher thought processes as perceived by Plymouth-Canton teachers.

I need your guidance in helping me to make appropriate changes. Please complete the questionnaire as explained in the instructions and also mark whether the question is clear or not clear. If you mark not clear, please write in why it is not clear.

Please return the questionnaire to me by Thursday, December 22.

Thanks so much for helping me to modify this instrument.

Sincerely,

Norma Foster

APPENDIX A

Letter to Plymouth-Canton Community Schools Requesting Permission to Conduct the Study

January 19, 1989

Mr. Richard Egli
Plymouth-Canton Community Schools
454 S. Harvey
Plymouth, MI 48170

Dear Mr. Egli:

I am a teacher at Gallimore Elementary School and am currently working on my dissertation for a Ph.D. in Educational Administration at Michigan State University. I have discussed my research with Dr. Hoben, and he suggested I contact you for further written approval.

The purpose of my study is to examine the extent to which cognitive coaching has affected teachers' thought processes as perceived by cognitively coached teachers in the Plymouth-Canton Community School District. The four categories of teacher thought processes that will be examined are: planning, teaching, analyzing and evaluating, and applying.

I will be using a self-administered questionnaire to measure teachers' perceptions of cognitive coaching. All one hundred seven (107) cognitively coached teachers will receive the questionnaire via inter-office mail. The questionnaire is enclosed for your perusal. Dr. Hoben, Dr. Homes, and Mrs. Spaniel have reviewed this questionnaire.

I would like your (the district's) permission to have our cognitively coached teachers assist me with this research project.

I am excited about this study, and look forward to hearing from you soon.

Sincerely,

Norma J. Foster

Norma J. Foster

Enclosure

Plymouth-Canton Community Schools
454 S. Harvey Street
Plymouth, Michigan 48170
(313) 451-3188

January 25, 1989

Ms. Norma J. Foster
44490 Clare Blvd.
Plymouth, MI 48170

Dear Ms. Foster:

What a great idea for a dissertation!

This letter is to formally grant you permission to do research in our district as outlined in your letter of January 19. There are a couple of minor requirements of which you need to be aware:

* The study must be done without interfering with the normal operation of the district.

* Any research done in the district must have full results made available to the district when the study is completed.

* Involvement by any teacher in the study must be voluntary.

If you can fulfill these requirements, please initial one copy of this letter and return it to me.

I wish you success in the completion of your research!

Sincerely,

Richard A. Egli

Richard A. Egli, ASPR
Administrative Assistant for Community Relations

Enclosure

CC: John M. Hoben, Superintendent
Michael J. Homes, Assistant Superintendent/Instruction
Shirley Spaniel, Executive Director/Elementary Education

MICHIGAN STATE UNIVERSITY

UNIVERSITY COMMITTEE ON RESEARCH INVOLVING
HUMAN SUBJECTS (UCRIHS)
206 BERKEY HALL
(517) 353-9738

EAST LANSING • MICHIGAN • 48824-1111

February 22, 1989 **IRB# 89-090**

Norma J. Foster
44490 Clare Blvd.
Plymouth, MI 48170

Dear Ms. Foster:

Re: "THE IMPACT OF COGNITIVE COACHING ON TEACHERS' INTELLECTUAL THOUGHT PROCESSES AS PERCEIVED BY COGNITIVELY COACHED TEACHERS IN THE PLYMOUTH-CANTON COMMUNITY SCHOOL DISTRICT IRB# 89-090"

The above project is exempt from full UCRIHS review. I have reviewed the proposed research protocol and find that the rights and welfare of human subjects appear to be protected. You have approval to conduct the research.

You are reminded that UCRIHS approval is valid for one calendar year. If you plan to continue this project beyond one year, please make provisions for obtaining appropriate UCRIHS approval one month prior to February 22, 1990.

Any changes in procedures involving human subjects must be reviewed by the UCRIHS prior to initiation of the change. UCRIHS must also be notified promptly of any problems (unexpected side effects, complaints, etc.) involving human subjects during the course of the work.

Thank you for bringing this project to our attention. If we can be of any future help, please do not hesitate to let us know.

Sincerely,

John K. Hudzik, Ph.D.
Chair, UCRIHS

JKH/sar

cc: L. Romano

APPENDIX A

Letter to Teachers to Accompany Questionnaire

Dear Colleague:

Attached to this cover letter is a questionnaire. I would deeply appreciate you taking approximately ten to fifteen minutes to thoughtfully complete it.

I am a teacher in the Plymouth-Canton Community School District and a doctoral student at Michigan State University. I am interested in studying teacher perceptions of cognitive coaching and its impact in the four phases of teaching: planning, teaching, analyzing and evaluating, and applying.

Participation is voluntary and your responses will be kept confidential. You may choose not to participate or not to answer certain questions. After completion of this study, I will send you an overview of the major findings.

Please return the completed questionnaire via inter-school mail to me, Norma Foster, at Gallimore Elementary School. Please feel free to contact me if you have any questions or concerns.

Thanks so much for your time and assistance.

Sincerely,

Norma J. Foster

Norma J. Foster

APPENDIX B

TEACHER THOUGHT PROCESSES QUESTIONNAIRE

APPENDIX B

TEACHER THOUGHT PROCESSES QUESTIONNAIRE

Thanks, in advance, for taking the time to answer the following questions. Your cooperation is appreciated.

GENERAL INFORMATION

This questionnaire is designed to collect information about teachers' perceptions of cognitive coaching. The purpose is to examine the extent to which cognitive coaching has affected teacher thought processes in the planning, teaching, analyzing and evaluating, and applying phases of teaching.

There are no right or wrong answers. Your responses are confidential. To ensure confidentiality, do not write your name on this questionnaire.

Questions such as age, teaching level, and length of training will not be used to identify you, but will show how different groups of teachers respond to the questions.

INSTRUCTIONS

For the demographic section, please mark an X on the appropriate line.

There are five possible responses for each question. Please mark an X in the box of the response which most closely matches your perception. Mark only one box per question.

The response categories are:

1 = To a very little extent (VL)
2 = To a little extent (L)
3 = To some extent (S)
4 = To a great extent (G)
5 = To a very great extent (VG)

APPENDIX B

TEACHER THOUGHT PROCESSES QUESTIONNAIRE

DEMOGRAPHIC INFORMATION

1. Sex:

   _____ Male

   _____ Female

2. Age:

   _____ 25 years old or less

   _____ 26 years - 35 years

   _____ 36 years - 45 years

   _____ 46 years - 55 years

   _____ 56 years or over

3. Level you presently teach:

   _____ Elementary

   _____ Secondary

4. Years of teaching experience:

   _____ Less than 5 years

   _____ 6 - 10 years

   _____ 11-20 years

   _____ 21 years or more

5. Length of Cognitive Coaching Workshop you attended:

   _____ 2 days

   _____ 5 days

6. Number of conferences you have been involved in since the training:

   _____ 0 conferences

   _____ 1 - 3 conferences

   _____ 4 - 6 conferences

   _____ 7 or more conferences

DEMOGRAPHICS, cont.

7. For most of my conferences, the coach (conferencer) was:

_____ an administrator

_____ a teacher

_____ Statement does not apply since I did not do any conferencing.

Response categories:

1 = To a very little extent (VL)
2 = To a little extent (L)
3 = To some extent (S)
4 = To a great extent (G)
5 = To a very great extent (VG)

	VL 1	L 2	S 3	G 4	VG 5
1. To what extent has cognitive coaching helped you to plan lessons?					
2. To what extent has cognitive coaching helped you with teaching lessons?					
3. To what extent has cognitive coaching helped you with analyzing and evaluating lessons you have taught?					
4. To what extent has cognitive coaching helped you with applying what you have learned in your teaching to future lessons?					
5. To what extent has cognitive coaching helped you in choosing your teacher behavior(s) for the lesson during the planning of the lesson?					
6. To what extent has cognitive coaching helped you to envision the sequence of the lesson during planning?					
7. To what extent has cognitive coaching helped you in choosing your teacher behavior during the teaching of the lesson?					
8. To what extent has cognitive coaching helped you to make decisions during teaching?					

	VL 1	L 2	S 3	G 4	VG 5
9. To what extent has cognitive coaching helped you to think after your teaching about the lesson?					
10. To what extent has cognitive coaching helped you to evaluate your instruction by observing student behaviors?					
11. To what extent has cognitive coaching helped you to think about alternative courses of action for your teaching?					
12. To what extent has cognitive coaching helped you to judge the worth of decisions made during your teaching?					
13. To what extent has cognitive coaching helped you to think more when planning?					
14. To what extent has cognitive coaching helped you to make a commitment to experimenting with your own teaching behaviors?					
15. To what extent has cognitive coaching helped you to realize that you are in control of the learning that takes place?					
16. To what extent has cognitive coaching helped you to envision the student learnings that are to result from your instruction?					
17. To what extent has cognitive coaching helped you to generate alternative courses of action for your teaching?					

	VL 1	L 2	S 3	G 4	VG 5
18. To what extent has cognitive coaching helped you to monitor your own progress as far as implementing your lesson plan is concerned?					
19. To what extent has cognitive coaching helped you to see the relationship between your specific lesson and your long-range teaching goal?					
20. To what extent has cognitive coaching helped you to decide which teaching acts and methods are effective for you in certain teaching situations?					
21. To what extent has cognitive coaching helped you to remember your teaching plan during the teaching?					
22. To what extent has cognitive coaching helped you to compare intended to actual student behavior?					
23. To what extent has cognitive coaching helped you to decide what you need to do to have future teaching successes?					
24. To what extent has cognitive coaching helped you to alter your teaching plan as needed based on the behavior of your students?					
25. To what extent has cognitive coaching helped you to remember student and teacher behavior from the teaching?					
26. To what extent has cognitive coaching helped you to think more during teaching?					

	VL 1	L 2	S 3	G 4	VG 5
27. To what extent has cognitive coaching helped you to self-evaluate your own actions during planning and teaching?					
28. To what extent has cognitive coaching helped you to plan how to assess the student learnings that will result from your instruction?					
29. To what extent has cognitive coaching helped you to think more about using what you learned during the lesson in future lessons?					
30. To what extent has cognitive coaching helped you to think about your teaching behaviors?					
31. To what extent has cognitive coaching helped you to plan the sequence of your lesson (what will happen first, second...)?					
32. To what extent has cognitive coaching helped you to plan future lesson strategies based on your analysis of previous lessons taught?					
33. To what extent has cognitive coaching helped you to become more aware of students' behavioral cues that they are with you or not with you?					
34. To what extent has cognitive coaching helped you to decide on observable student behaviors that you want from the lesson?					

	VL 1	L 2	S 3	G 4	VG 5
35. To what extent has cognitive coaching helped you to use clear and precise language during teaching?					
36. To what extent has cognitive coaching helped you to analyze why objectives were or were not achieved during the lesson?					

THANKS FOR YOUR COOPERATION.

PLEASE RETURN QUESTIONNAIRE TO NORMA FOSTER, GALLIMORE SCHOOL.

APPENDIX B

FORM INCLUDED AT END OF QUESTIONNAIRE FOR PILOT STUDY ONLY

In what other ways has cognitive coaching helped you in planning lessons?

_____

_____

_____

In what other ways has cognitive coaching helped you in teaching lessons?

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In what other ways has cognitive coaching helped you in analyzing and evaluating lessons?

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In what other ways has cognitive coaching helped you in applying what you have learned from lessons to future lessons?

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Other comments/suggestions to improve this questionnaire:

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