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DISSERTATION

CHANGE IN LITERACY ORIENTATION THROUGH REVISED STAFF DEVELOPMENT

Submitted by

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School of Education

In partial fulfillment of the requirements

for the Degree of Doctor of Philosophy

Colorado State University

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WE HEREBY RECOMMEND THAT THE DISSERTATION PREPARED UNDER OUR SUPERVISION BY ADELINE JANE CARROLL MARTIN ENTITLED CHANGE IN LITERACY ORIENTATION THROUGH REVISED STAFF DEVELOPMENT BE ACCEPTED AS FULFILLING IN PART REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY.

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ABSTRACT OF DISSERTATION

CHANGE IN LITERACY ORIENTATION THROUGH REVISED STAFF DEVELOPMENT

Staff development is presently in a state of reinvention to reflect what has been learned about adults as learners and to meet the, often competing, needs of schools and teachers. This study analyzes the effects of non-traditional staff development utilizing constructivist listening dyads on change in teachers' literacy orientation.

A quasi-experimental, mostly quantitative single group pre and post test design was used to analyze data from the Literacy Orientation Survey (LOS) and its subsection scores, Beliefs and Practices. The teachers also wrote statements about their literacy beliefs (i.e., practical arguments) before and after the staff development. Participants were twenty-five Del Norte school teachers teaching grades 2 – 12.

Significant differences were found between the pre and post LOS scores; thus, a significant change (toward a constructivist orientation) was made in literacy orientation. Similar significant results were found for the change in Practices scores, but not for change in the Beliefs scores. Surprisingly, the teachers who scored high on the LOS initially made the most gains. No significant differences in gain scores were found for the variables of gender and assigned teaching level, except between the elementary and the middle and high school teachers' Beliefs gain scores. The elementary teachers' scores went up and the middle/high teachers' scores went down slightly.

Positive correlations were found for perceived level of preparation and also amount of previous training in facilitating reading instruction with initial Practice scores but not with any other scores. Years of teaching experience showed no positive correlation with any of the LOS scores.

Teachers' concluding written statements about their literacy beliefs (i.e., practical arguments) showed that teachers better articulated their positions. Their final statements included more reasons in explanation or support of their actions, indicating increased understanding of purpose essential to sustained use of practice. Overall, the difference between the sum of initial and final practical arguments showed a significant increase, demonstrating an enhanced cumulative knowledge base.

This study has implications for schools needing effective, resource-efficient staff development. Findings of this study suggest that facilitating such collegial study across building lines promotes teacher change.

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CHAPTER I

The Problem

Experience and research indicate that to effect change and sustain implementation of research-based teaching practices in the educational system, in particular in the field of reading, requires new and more effective staff development. Increased demands for teacher effectiveness, especially in the area of reading, combined with low budgets for professional development intensify the need for effective staff development in Colorado public schools. Since teacher beliefs govern the way they teach, clearly, improving teaching requires that teachers be aware of their beliefs and hold those beliefs accountable to advances in theory and research.

Since there is a difference between the beliefs held by many teachers and the beliefs powering recent constructivist oriented initiatives in educational reform, successful reduction of that gap appears to be necessary. Successful implementation of current advances in knowledge can only derive from fundamental investigation and changes in the mental models that drive teacher's curriculum enactment.

That teachers can learn a wide variety of practices, skills, and behaviors is very well documented. In reality, many teachers use a very limited range of practices despite mandated reforms and extensive traditional staff development (Sparks, 1995). Since a close association exists between orientation (beliefs) and practice (Wham, 1996), ascertaining how to assist teachers to examine the beliefs that govern their practice and

discard or revise those inhibiting the shift to effective practice appears fundamental to realizing change.

The premise of this study is that the principles of constructivism are fundamental to good literacy instruction and provide a framework for developmentally appropriate practices in schools. Therefore, this study examines the effect of a staff development project designed to move teachers toward a constructivist theoretical orientation to reading. Two predictions were made: (1) that teacher orientations to reading before the staff development project would generally fall in the traditional or eclectic category as identified by the Literacy Orientation Survey (Wham, 1996), and (2) that teacher beliefs would be changed after the professional development project, resulting in a shift in teachers' orientations to reading away from the traditional toward the constructivist orientation.

The need for the study, purpose, research questions, delimitations, limitations, definition of terms, and significance of the study will be discussed in this chapter.

Need for the Study

There is an increasing realization that reform involves much more than teaching practices. Successful reform must involve understanding and taking into account the underlying paradigmatic belief systems of teachers (Hunsaker & Johnson, 1992). Much has been learned through clinical experience, research on training, and studies of transfer of training about teacher skills, understandings and characteristics that facilitate learning; and the research base in support of constructivist learning continues to grow. The concern for identification of appropriate staff development ensues not only from questions about what constitutes "best practice" but also from the contradictions that exist

between skill learning and use. Skills, practices and behaviors have been learned through staff development projects. However, assumptions that a linear process/product relationship exists between teaching teachers to use research-proven practices that result in improved student achievement and their doing so are not grounded (Joyce & Showers, 1995). The present focus for staff developers is on not only the teachers' access to research-based practice, but also their acceptance and use of it.

Teacher thinking and teacher behavior are guided by an organized set of beliefs or theories that influence teaching practices and substantial gains in the use of effective practices can be accomplished when appropriate conditions are provided (Goodlad & Klein, 1970; Medley, 1977; Sirotnik,1983). Change in practice is closely associated with change in beliefs and theories (Clark & Vinger, 1978; DeFord, 1979; Fenstermacher & Richardson, 1994; Fullan 1996; Gove, 1981; Bos & Anders, 1994; Richardson, 1994; Weissglass 1997). Practice is consistent with orientations (beliefs) about reading (Wham, 1996), and altering orientation to reading to a constructivist orientation results in change in practice. However, practices to be implemented frequently are not seen by teachers as a fit with what teachers have experienced and believe (Richardson, 1994). It is not unusual for teachers to experience some degree of frustration when they begin to deal with their expanded or altered belief systems (Pace, 1992).

Some teachers accept new information and make changes and others do not. Why? Weissglass (1990) posits that structures for teachers to deal with change are inadequate in most traditional staff development programs, since the focus of programs has traditionally been almost exclusively on delivery of content.

Attempts to alter beliefs and theories frequently result in strong teacher feelings. Ignoring teacher feelings or not affording the avenues for them to be expressed and dealt with during the change process is a reason for modest results in teacher change (Fullan 1996; Weissglass, 1991). A staff development process that not only leads to teachers being informed about effective practice but also making change in practice to reflect the research must, then, include means for teachers to deal with feelings and beliefs that obstruct individual change. Accepting the premise that knowledge is constructed rather than merely received from others (Brooks & Brooks, 1993), implies that teachers need opportunities as do any learners to engage in a self-regulated process resolving inner cognitive conflicts that surface with the introduction of new information. The work of Julian Weissglass, Professor of Mathematics at University of California Santa Barbara, through the Center for Educational Change in Mathematics and Science indicates that constructivist listening dyads may be structures that could be used to assist teachers to resolve those inner conflicts and move ahead in the change process.

The overall research problem for the investigator was to investigate whether employing constructivist listening structures combined with opportunities for teachers to learn about research-based practices having a constructivist orientation would influence their orientations to reading.

Purpose

This study was undertaken for two purposes. First, the investigator sought to determine the literacy orientations of teachers in the Del Norte Public School, a small rural school in Colorado. Second, the investigator endeavored to determine whether a staff development project would result in change in teacher orientation to reading. The

content in the staff development project was research-based practices reflecting a constructivist orientation to reading. Constructivist listening structures were used to promote processing of the staff development content.

Research Questions

1. What are the theoretical orientations to reading of a selected group of regular education grade 2-12 teachers?

2. Do theoretical orientations to reading increase (toward the constructivist orientation) after participation in the staff development project?

3. Will teachers who score lower (toward the traditional) on the Literacy Orientation Survey make more gains than teachers who score higher (toward the constructivist)?

4. Do theoretical orientations of teachers from certain demographic categories change more than others?

Definition of Terms

For the purpose of this study, the following terms have been defined:

Constructivist listening. A type of listening in which the listener listens attentively without paraphrasing, interpreting, questioning or in any way interrupting the talker. Since from the constructivist perspective, learning is a product of self-organization, the purpose of constructivist listening is to facilitate this self-organization by the talker. Typically there is a prompt for a constructivist listening session. The talker is encouraged to reflect on the meaning as interpreted from the prompt; express and work through

feelings that are interfering with clearer thinking. As a result, new meaning is constructed (Weissglass, 1990).

Constructivist orientation to reading. One of three categories describing teachers' orientation to reading as rated by the Literacy Orientation Survey (Wham, 1996). Teachers who demonstrate a constructivist orientation to reading "model the roles and operations of thinkers and learners" (Routman, 1991, p. 6) They believe learners make sense of the work by combining prior knowledge with new experience. Ten principles are evidenced in the constructivist orientation:

The teacher

- views literacy as a meaning-making process
- facilitates child-centered instruction
- creates an environment conducive to developing literacy skills
- provides effective instruction in strategic reading practices
- facilitates student writing
- employs flexible grouping
- provides instruction through a thematic approach that integrates subject matter across the curriculum
- employs meaningful assessment
- encourages parental involvement
- engages in ongoing reflection (Wham, 1996).

Constructivist listening dyad. Communication structure to facilitate formulation of new understandings. Two people engage in a constructivist listening dyad. Dyads are conducted in a prearranged time frame with each participant getting equal time to speak. The first person speaks while the other listens attentively, then the process is reversed. When beginning to use the dyad process, participants typically engage in one to three minute exchanges in response to a prompt. Prompts may be research articles, videos, data or other information presented on overhead transparencies, etc. Guidelines for the dyad structures are: 1. Each person is given equal time to talk. 2. The listener does not interpret, paraphrase, analyze, give advice, or break in with a personal story.

3. Confidentiality is maintained. 4. The talker is not to criticize or complain about the listener or mutual acquaintances in his or her turn (Weissglass, 1990).

Eclectic orientation to reading. A combination of traditional elements with some constructivist elements distinguishes an eclectic orientation to reading.

Practical argument. A statement of beliefs about a particular topic that may or not contain premises or support. It is a product of reflection, the deliberative reconsideration of practice. Elicitation of practical arguments can be used to build capacity that enables a teacher to teach himself. A practical argument "begins with the expression of desired end-states such as seeking to develop a sense of honesty, fair-mindedness, and mutual regard in the learner" (Fenstermacher, 1987, p. 416).

Practical argument empirical premise. A "statement or set of statements that make a claim about the world, and is thus subject to scrutiny, usually in the form of a test of some kind" (Fenstermacher, 1994, p. 35). An example is the teachers' contention that students whose parents read to them when they are young will learn how to read faster than students whose parents do not read to them

Practical argument situational premise. A "statement or set of statements that describes the context in which the teacher's action takes place" (Fenstermacher, 1994, p. 35).

Practical argument stipulative premise. A statement or set of statements made by teachers that contains "reasons teachers offer in explanation or support of their actions" (Fenstermacher, 1994, p. 35). This premise incorporates the ways teachers make meaning out of their work. They are not expressive of sought-after outcomes, nor are they empirical in character; thus they are neither value nor empirical premises. For example, a

teacher claims that reading is being able to accurately read aloud a passage of text. This claim has the form of a definition. It is not a testable claim, rather it expresses the meaning the teacher gives to the student's being able to read.

Practical argument value premise. A "statement of the benefit or good to be derived from an action [which]. . . may be phrased as a declarative statement (My goal is to help children become successful human beings:, or as an imperative (Every child must learn to read)" (Fenstermacher, 1994, p. 34).

Traditional orientation to reading. A traditional orientation to reading is characterized by the belief that children develop literacy by mastering a series of discrete skills which are presented in a structured sequence from simple to complex. The underlying assumption is that a child first learns to read and later reads to learn (Chall, 1983).

Delimitations

This study will confine itself to the study of data gathered during a staff development project involving teachers assigned to grades 2-12 in the Del Norte, Colorado Public Schools.

Assumptions and Limitations

It is assumed that teachers in the Del Norte Schools represent the characteristics of typical teachers assigned to teach in grades 2-12 in other rural Colorado schools. Further, it is assumed that teachers honestly understood and followed the directions given for the survey and staff development project.

Since the number of teachers that participated in the staff development project was only 25 and there was no control group, generalizability and internal validity are decreased.

Significance of the study

Since teacher thinking and teacher behavior are guided by an organized set of beliefs, it is beneficial to know ways to break down or remove barriers to construction of new meaning. Teachers defend beliefs about teaching and learning until sufficient means is provided for them to express and deal with strong feelings, allowing them to move forward in constructing new meaning (Weissglass, 1991). This study is needed to determine whether constructivist listening structures could be used as a resource (time and dollars) efficient way to assist teachers to release previously held beliefs and move toward a constructivist orientation to reading.

Conducting informal studies on the learning to learn effect by asking teacher teams to teach themselves models of teaching through the print and video media alone without assistance of formal training showed teachers able to teach themselves and effectively use the strategies (Joyce & Showers, 1995).

The staff development project provided opportunities for teachers to consider research on reading teaching and learning, listen to input from peers, and through the use of constructivist listening structures examine (and possibly reconstruct) their beliefs.

CHAPTER II

Review of the Literature

The dramatic change that is occurring in education, bringing an intense focus on improved achievement results for all children, has forced staff developers to search for more effective means to assist teachers in improving practice. Although there is a push to improve practice in all content areas, reading is generally accepted as the foundation for all learning and has subsequently become the primary focus in Colorado school districts.

The premise of this study is that a constructivist orientation to reading is conceptually congruent with developmentally appropriate practice and provides a solid foundation for staff development. Since beliefs individuals hold are the best indicators of the decisions they make (Bandura, 1986), successful implementation of constructivist practices may derive from fundamental investigation and changes in the mental models that drive teachers' curriculum enactment.

The purpose of this study is to determine if staff development that incorporates constructivist listening structures with the study of researched-based practices in reading resulted in change in teachers' orientations to reading. Therefore the literature review will include four themes. The first theme discusses facilitating teacher change as a component in general school improvement. Components of effective staff development are identified. Some challenges to effective staff development and possible reasons for modest results are considered. The second theme describes the shift from traditional staff development models to emerging forms that are constructivist in nature. The third theme

identifies orientations to reading and current perspectives in teacher beliefs as they relate to reading. The final theme discusses the role of constructivist listening in the change process.

Facilitating Teacher Change

Facilitating teacher change is a complex process. National and Colorado legislation in the 1990s (HB 93-1313 and the Colorado Literacy Act) combined with reports of low levels of student achievement sharply focused Colorado schools on the need for teacher effectiveness and subsequently upon implementing staff development strategies to improve practice.

Research yielded compelling evidence that practice in reading was directly associated with beliefs about teaching and learning (DeFord, 1985; Wham, 1996). That teacher beliefs governed the way teachers teach became of special significance in Colorado due to local control in education. Teachers have had a great deal of latitude to do their jobs in the way they believe to be effective. A review of the Colorado Student Assessment Program (CSAP) results in reading was evidence to many that traditional forms of staff development had fallen short in yielding teacher effectiveness.

It was clear that there was a gap between the belief systems (reflected in practice) of many teachers and the initiatives that have a constructivist orientation (Brooks & Brooks, 1993; Joyce & Showers, 1995; Wham, 1996). However, there were many studies supporting the idea that if teachers were given the opportunity to consider new information and reflect upon their teaching practices, they not only got better at reflection but they also often changed as well (Bullough, 1989; Clift, Houston, & Pugach, 1990; Little, 1991). This implied that a value system that supported these types of activities

combined with structures to assist teachers in the reflective process could be helpful in facilitating change toward a constructivist orientation.

To help put the staff developer's task of changing teachers into perspective an overview of the teacher's role in the comprehensive education change process referred to by Fullan (1991) as reculturing schools follows.

Change in schools. Fundamental to change in schools is the redesigning of the teacher's role in six areas identified by Fullan (1991). First, teachers must acquire skills in applying new research on teaching, learning, assessment, and technology, which match the dramatic increase in the knowledge base about learning over the past decade. Second, teachers must exhibit the willingness to assume direct responsibility for creating collaborative work cultures. Without a change in the norms of school culture, the implementation of new teaching skills will not happen. Third, teachers must develop a greater understanding of the context of particular schools, which include parents, communities, businesses, social agencies, as well as changing demographic and social trends. Fourth, teachers must demonstrate a commitment to continuous learning and critical reflection about teaching. There is much to learn and it keeps changing. Improvement is a never-ending proposition. Fifth, teachers must develop expertise in dealing with all aspects of the change process. They must know how to initiate change despite the system, how to understand and manage the implementation dip, how shared visions are created over time through action, and how to plug into networks of ideas and resources. Finally, teachers must have a moral commitment to making a difference in the lives of students--especially the disadvantaged.

In conclusion, facilitating teacher change involves much more than a shift in practices, it also involves the adoption of a fundamentally different paradigmatic belief system. Implementation of revised staff development requires that leaders clearly understand the change process, how organizations develop, and what strategies can be utilized to effect teacher change.

The task of staff development became to empower teachers to accept the challenge and take responsibility to make a difference for children by providing avenues for them to work together to study, improve practice, and cope with the change process. It was this thinking that guided the staff development project being studied.

Components of effective staff development. Qualities of effective staff development have been summarized by many, including Cantor (1992), Cranton (1992) Fullan (1990), Griffin (1986, 1991), Hilliard (1997) Hawley and Valli (1996), Hirsh (1999), Loucks-Horsley, Harding, Arbuckle, Murray, Dubea and Williams (1987), Lambert (1995), McLaughlin (1991), Meyer (1988), Newell (1996), Richardson (1994), Sparks (1995,1997), Wideen & Andrews (1987), and Weissglass (1991). Some commonly identified qualities are:

- Programs should be school-wide and content-specific.
- Programs should be structured to reflect what has been learned about the needs and preferences of adult learners. Adults are autonomous and self-directed learners, are goal oriented, are relevancy oriented (problem-centered)—they need to know why they are learning something, are practical problem solvers, and have accumulated life experiences.

- Programs should be long-term, with adequate support and follow-up. In particular, school principals should be supportive of the process and encouraging of change.
- Processes should encourage collegiality and increase staff's knowledge and practice of interdisciplinary team organization.
- Program content should incorporate current knowledge obtained through well-designed research.
- Staff development should increase educators' understanding of how to provide school environments, instruction and assessment that are responsive to the developmental needs of students.
- Staff development should increase educators' ability to provide a challenging, developmentally-appropriate curriculum based on desired skill and knowledge outcomes for all students regardless of their culture, race, gender, ethnicity, or special needs.
- Staff development should prepare teachers to use research-based teaching strategies appropriate to their instructional objectives and their students.
- Staff development should include avenues for teachers to work through feelings that surface with the introduction of new information provided in the staff development process.

Staff development needed to provide decision makers with appropriate knowledge, skills, and attitudes regarding organizational development and systems thinking; be based on knowledge about human learning and development and model this understanding and use content that has proven value in increasing student learning and development; provide a framework for integrating innovations and relate those

innovations to the mission of the organization; provide the follow-up necessary to ensure improvement; require staff members to learn and apply collaborative skills and work collegially; require knowledge and use of the stages of group development to build effective, productive, collegial teams. Staff development broadened in focus.

Challenges for staff developers. Staff developers needed to not only make traditional published research on effective practice available to teachers but also structure ways for teachers to share existing knowledge. Much has been learned through "practical inquiry" (action research) discovery learning projects (Richardson 1994) and teachers have much existing knowledge to share. To disregard that existing knowledge is to ignore one of the most important features of human growth—learning from others. To effect teacher change, the research suggested, teachers needed to be challenged to consider and process new information. Affording avenues to assist them to deal with the feelings that arose as a result could prove very helpful in moving the change along (Weissglass, 1990). This multidimensional concept of change increased the complexity of planning and implementing effective staff development, creating real challenges for staff developers in small schools. The need for attention to these three components of change is discussed next.

First, making research available was deemed important because without a solid theoretical base, teachers may not have the background to continue to choose activities consistent with constructivist teaching (Lenski, Wham & Griffey 1998). Due to the limited exposure teachers may have had to research, theory, and practice, they may be unaware of the relationships that exist to inform instructional decisions. For example veteran teachers using basal texts, manuals, and traditional methods textbooks in reading

instruction may not have been exposed to the comprehensive theory and research. Susan Loucks-Horsley, Director of the professional development project for the National Institute of Science Education, WestEd, and K-12 director at the National Research Council's Center for Science, Mathematics, and Engineering Education, in an interview with Dennis Sparks (1997), Director of the National Staff Development Council, explained that getting the effective strategies out into the literature that practitioners read is important, but the reference list compiled by the National Staff Development Council includes a lot of obscure journals and types of publications that busy practioners don't have access to or time to read. A result is that many staff development programs have excluded research and theoretical connections. Emphasis has often been on "quick fix" programs that were to deal with identified problem areas. Not only has traditional research been absent from the programs, the wealth of knowledge gained through years of experience has not been utilized. Action research, for example, is a special kind of research combining systematic inquiry with actions that teachers test. Improvement hinges on teachers comparing existing practice and student achievement to that which results from the implementation of shared ideas. Programs such as action research need to be put in place to not only challenge the existing beliefs of teachers, but also allow teachers to learn together and to share with others what they have learned through experience. Teachers frequently have conducted informal research and have much to share, but there are frequently few structures in place to facilitate the sharing.

What teachers have learned and believe about education topics could be framed as practical arguments, statements that may or may not be supported. Getting teachers to put their beliefs into words could be a valid first step in the change process, because

when teachers' practical arguments were challenged upon consideration of formal or informal research findings, disequilibria resulted (Fenstermacher, 1994). Change happens when there is a perceived need to change.

Second, for practices to be implemented and sustained requires a deeper understanding and acceptance of the reason for the change. "It is possible to change 'on the surface' by endorsing certain goals, using specific materials and even imitating the behavior without specifically understanding the principles and rationale for change" (Fullan, 1982, p. 33).

Teachers use what Sparks (1995) termed the "wisdom of practice" to interpret what they find in published the research. Teachers may not see the research as a fit with what they have experienced and believe and thus there is the tendency for it to be rejected (Richardson, 1994a). Because teacher's implicit theories vary from teacher to teacher (Munby, 1984) and may be at odds with those in the research or of administrators and curriculum developers, the result is frequently resistance to change. The notion that use of research is simply a matter of teachers becoming acquainted with it and then somehow slipping it into their instruction is not grounded (Joyce & Showers, 1995). For example, Richardson (1994) found that a practical argument staff development project resulted in the application of research by some teachers, while a number of teachers were unchanged in beliefs and practice in spite of the three-year intervention. Although districts have mandated staff development programs, a large portion have never been fully accepted and implemented by teachers (Joyce & Showers, 1995). Why they have not been accepted or fully implemented puzzled staff developers.

One consideration that may be of primary importance in considering why programs have not been fully accepted and implemented is that people must be able to attach personal meaning to new information before they can accept what the changes mean to themselves and the organization (Weissglass, 1990). Ignoring teacher feelings in staff development programs frequently leads to disappointing results (Weissglass, 1991).

> Real change whether desired or not, whether imposed or voluntarily pursued, represents a serious personal and collective experience characterized by ambivalence and uncertainty and if the change works out, it can result in a sense of mastery, accomplishment and professional growth. The anxieties of uncertainty and the joys of mastery are central to the subjective meaning of educational change and to success or failure—facts that have not been recognized or appreciated in most attempts at reform (Fullan, 1991, p.26).

Weissglass (1990) explained that as new understandings were achieved, there was a need, often intense, to talk to another person. Beliefs, attitudes and relationships are connected to people's feelings about themselves, their colleagues, and their students. Reform programs that addressed only the cognitive and behavioral aspects of educators' professional lives neglected an important part of their humanness and fall short of fully attending to the empowerment of teachers. By ignoring the influence of feelings on thought and action, such programs promoted a view of school as a factory, whose purpose was to install knowledge into students' minds. Some educators, however, had a vision of schools as communities where people cared about and supported each other in learning and living; adults nurtured young people as complete and complex human beings; and youngsters were encouraged and stimulated to construct their own understanding, rather than memorize facts and procedures. If such a view was promoted, then reform programs must include methods that addressed educators' feelings concerning schools, students, and colleagues. Any reform effort should provide

educators with the opportunity to reflect on and express, their feelings about their current situations and the proposed changes, either (or both) of which may have deep emotional content. Constructivist listening surfaced a means for providing that opportunity (Weissglass, 1990).

Fullan discussed the failure of many educational change programs and pointed out that,

> The real crunch comes in the relationships between these new programs or policies and the thousands of subjective realities embedded in people's individual and organizational contexts and their personal histories. How these subjective realities are addressed or ignored is crucial to whether potential changes become meaningful at the level of individual use and effectiveness. (Fullan, 1982, p. 35).

Some educational change literature made the connection between feelings and educational change explicit (Weissglass, 1990), although the depth of the relationship between feelings and educational change has been rarely acknowledged by most educators. Weissglass explains that most reform efforts focused on the teacher's knowledge or behavior, ignoring the fact that teaching and learning are done by persons with unique histories, feelings, understandings, and needs. In recent years there have been numerous calls for fundamental changes in the content of many subject areas. However, in many schools teachers have been faced with increased class size and clerical responsibilities, declining resources, and pressure to raise standardized test scores, creating high levels of stress that affect teachers' and principals' abilities to even consider, no less implement or sustain, the processes of change. Weissglass further explained that in schools where change from the traditional methods of "teacher as lecturer" and "drill and practice" is most needed, namely those schools serving children who have not been

succeeding in school, the stress on teachers and students is extremely high. Given the awareness of the high level of stress experienced by teachers and the concerns generated in educators by proposed change, Weissglass purports that the educational community's failure to help teachers work through their feelings about education and change is a major obstacle to achieving educational reform. He views mandated educational change as the "antithesis of empowerment", sending a message to teachers that they are inadequate and unappreciated for their efforts and that experts have the answers. Weissglass concluded that if instructional practices that are so resistant to reform efforts are to change, the attitudes, beliefs and relationships that determine instructional practices must also change. Thus, providing a means to help teachers to work through feelings in order to achieve educational change appear to be essential if any professional project is to have lasting effect (Weissglass, 1990, p. 365).

The Shift from Traditional Staff Development to Emerging Forms

New forms of staff development that appear to be particularly useful in the change process emerged in the 1990s. The major conceptual difference between the new forms and the traditional is that while the anticipated change outcomes--that is, what the teachers are supposed to do in their classrooms is pre-specified, sometimes mandated, in the training model, the emerging staff development is voluntary and individualized. In the new forms there are much more open-ended goals, often producing significant changes in teacher beliefs, cognition, and practice. The scope of the new form is expanded. A description of traditional staff development including reasons for acceptance, assumptions, results, limitations and an overview of emerging forms follow.

Traditional staff development. Contrasting with the emerging constructivist forms is the traditional form of staff development, a training approach. The training approach is teaching programs or strategies to teachers. It typically begins with someone, frequently outside the school, determining that a process, method, or system should be implemented in classrooms. The training model has a clearly stated set of objectives and learner outcomes. Cruickshank and Metcalf (1990) identify teaching skills as the outcomes. Showers, Joyce and Bennett (1987) add thinking processes to the list of outcomes.

A basic reason for the general acceptance of the training approach to staff development is that a lot of the teachers in today's schools were trained in the theories of behaviorism (Richardson, 1994). These teachers believe that behaviors or skills are the goals of instruction and that learning is transmitted from one person to another (Fosnot, 1996). In transmission-based classrooms, teachers deliver knowledge and textbooks are the primary source of information. Student inquiry is not a significant element. Instead of being considered thinkers and inquirers, students are considered blank slates awaiting fulfillment as their teachers disseminate information. The "tellers of truth" (Cohen, 1988, p.15) mode of teaching is currently an accepted paradigm for many classroom teachers who inculcate knowledge in students. In line with the theories of behaviorism, the training approach staff development is designed to teach specific behaviors to teachers.

Sparks and Loucks-Horsley (1990) identify important assumptions inherent in the training model: that there are behaviors and techniques worthy of replication by teachers in the classroom and that teachers can learn or change their behaviors to replicate behaviors in their classroom. Even if teachers accept and replicate training, a consideration of long-term goals is necessary. After training is completed in the

traditional staff development mode, it may not be desirable for teachers to continue using a process, method, or approach into the distant future. With added research and investigation into effective practice, revised processes, methods, and approaches that may be more appropriate may develop (Richardson, 1994). This thinking is consistent with constructivist staff development, which emphasizes a shift from insuring mastery of isolated decontextualized information to teaching and learning as an integrated, socially embedded process of meaning making. The specific training, therefore, is more prescriptive in traditional staff development than it is in the constructivist.

Historically the training approach has produced less than desirable results (Goodlad, 1991; Joyce & Showers, 1995; Sparks, 1996) in teacher change. It has often led to teachers feeling bad about themselves, creating resistance to their thinking through issues for themselves (Weissglass, 1991).

Many of the teacher training approach staff development programs were relatively short term, involving teachers in several hours or several days of workshops, with limited follow-up activities (Goldenberg & Gallimore, 1991). Such programs only had a chance of succeeding with those teachers whose beliefs match the assumptions inherent in the innovation; and even still, these teachers might not adopt the new innovation. Joyce and Showers (1995) estimate that such practices garneted an implementation level of 15 percent.

Traditional staff development programs were often criticized as notoriously unsuccessful in bringing about attitudinal changes in teachers. Gusky (1986) found teachers' beliefs changed as a result of changed behavior. However, when teachers

didn't use innovations in the first place or saw little change in student achievement as a result of the revised practice, the same change was not seen.

A shift from simply evaluating the extent to which a program was implemented to looking closely at the evidence (student achievement) of the effectiveness of the staff development further substantiated that change resulting in improved teacher effectiveness has been minimal in many Colorado schools. Student achievement results for all Colorado districts since the beginning of the Colorado Student Assessment Program may be viewed on the Colorado Department of Education website.

Ann Liebermann (1995) summarized the limitations of traditional approaches: 1) Teachers' professional development has been limited by lack of knowledge about how teachers learn. 2) Teachers' definitions of the problems of practice have often been ignored. 3) The agenda for reform involves teachers in practices that have not been part of the accepted view of teachers' professional learning. 4) Teaching has been described as a set of technical skills, leaving little room for the invention and building of craft knowledge. 5) Professional development opportunities have often ignored the critical importance of the context within which teachers work. 6) Strategies for change have often not considered the importance of support mechanisms and the necessity of learning over time. 7) Time and the necessary mechanisms for inventing, as well as consuming, new knowledge have often been absent from schools. 8) The move from direct teaching to facilitating in-school learning is connected to longer-term strategies aimed not only at changing teaching practice, but at changing the school culture as well. 9) Networks, collaboratives, and partnerships provide teachers with professional learning communities that support changes in teaching practices. Lieberman concluded:

> As opportunities increase for professional learning that moves away from the traditional inservice training mode and toward long-term, continuous learning in the context of school and classroom and with the support of colleagues, the idea of professional development takes on even greater importance. For if teacher learning takes place within the context of a professional community that is nurtured and developed both within and outside the school then the effects may be more than just an expanded conception of teacher development. Indeed, such teacher learning can bring about significant and lasting school change (1995, p. 595).

Emerging forms of staff development. Replacing the transmission (training) model, the emerging forms of staff development attempt to develop in teachers a more systematic and reflective approach to their own change process.

Patricia Cranton (1996) described professional development as transformative learning--learning that takes place when an individual has reflected on assumptions or expectations, has found these assumptions to be faulty, and has revised them. There are no right techniques that can always be prescribed. Questioning and thinking critically about one's own practice constitutes the basis for transformational professional development. Building capacity for teachers to problem-solve and "do the right thing" when teaching is not accomplished by the traditional "sit and get" programs. Chin and Benne (1969) describe this revised staff development as the "normative re-educative" approach to change. The emerging staff development process is based on concepts of personal growth and development of adult learners, as well as collaboration among teachers that leads to collective change. Katz (1979) calls the changing form the Advisory Model of Professional Development. Gallagher, Goudvis and Pearson (1988) call the approach "mutual adaptation" which, they purport, is an appropriate form for dramatic change such as shifts in orientations and beliefs.

Emerging forms of staff development strive to develop collaboration in the learning processes. Although the lack of communication resulting from the traditional isolationism and privatism experienced in many schools hinders self-directed teacher professional growth, teachers can learn much from one another (Little, 1991). A culture that values learning and experimentation combined with collegial sharing challenges teachers to rethink their beliefs and to try out new strategies. Structures such as constructivist listening dyads have successfully been used to break down the barriers to collaborative work and improve communication and deep processing of information (Weissglass, 1991).

Constructivist staff development, staff development in which teachers are assisted to manage their own change process, may be understood by considering the definitions, theories, and assumptions inherent in constructivism. Constructivism is a philosophical perspective derived from the work of Immanuel Kant which views reality as existing mainly in the mind, constructed or interpreted in terms of one's own perception. Thus, an individual's prior experiences, mental structures, and beliefs influence how experiences are interpreted. "Constructivism focuses on the process of how knowledge is built rather than on its product or object." (Harris & Hodges, 1995. p. 42). Fosnot (1996) viewed constructivism as having roots in the work of Piaget, Vygotsky and the semiotic interactionists. There are many dimensions of constructivist theory. In general, however, constructivism views humans as constructive agents and their understanding and knowledge as constructed products within a social context (Spivey, 1997).

Five guiding principles for establishing constructivist classrooms were identified by Brooks and Brooks (1993) in their book, The Case for Constructivist Classrooms.

Lenski, Wham and Griffey (1998) identified the principles as providing the foundation for constructivist teaching and identifying a constructivist orientation to reading. A summary follows:

1. Constructivist teachers pose problems of relative importance to students. This involves supporting students in investigating issues that have meaning to their lives rather than blindly accepting a prepackaged curriculum that they may or may not view as relevant.

2. Learning is structured around broad concepts rather than directing students to master a series of unrelated skills. Such classrooms focus on self-initiated inquiry and frequent student interaction rather than on competition and isolation.

3. Students' points of view are valued. This can be facilitated by asking questions and posing problems that require higher-level thinking of students.

4. New knowledge is built on students' prior experiences. Teachers who find out what students already know about a subject are supporting learning of new material by building bridges between the new and the known.

5. Student learning is assessed in the context of instruction and is used to inform teaching and learning. Traditional modes of assessment have convinced students that most questions have one right answer. A constructivist teacher, on the other hand, encourages students to use a variety of problem solving strategies before reaching conclusions, frequently resulting in a variety of right answers.

Accepting the premise that students regardless of age construct meaning from their experiences and gain knowledge and expertise requires a rethinking of the manner in which staff development is done. Clearly, the shift from transmission-based to

constructivist-based teaching and learning would also be expected in staff development. Staff development must fit with shifting paradigms in education about the ways in which we learn. The shift from the "sit and get" sessions in which relatively passive participants were "made aware" of the latest ideas regarding teaching and learning from so-called "experts" is toward including growth-promoting processes such as study groups and action research in which the theory of constructivism is operationalized.

Three representations of constructivist staff development are identified and briefly described next: Practical Argument Staff Development, Practical Rationality, and Constructivist Listening.

Practical Argument Staff Development (PASD) is an intensive one-to-one device used to assist teachers in examining their beliefs and reconstructing them (Fenstermacher, 1994). It operates on the notion that teachers want to be the best teachers they can possibly be, and, therefore, are looking for improvement strategies. First, videotapes of instructional practices are used as prompts for discussion about the instructional practice. Teachers then are asked to think about and describe their rationale for instruction that formulates a practical argument (a statement of beliefs about a specific topic). The teacher is then challenged by the staff developer to defend the position. Finally, the teacher modifies (or does not) the practical argument as a result of the interaction.

Several characteristics (Richardson, 1994) describe the nature of the Practical Argument Staff Development: 1) It is based on the notion that teachers' beliefs and understandings are contributors to their classroom practices, and should become, in part the content of staff development. To allow teachers' sharing beliefs about teaching and learning with others, a highly trusting environment, then, must be created. 2) Rather than

leading toward the implementation of a specific method, the goal is related to helping the participants to understand their own beliefs, and practices, consider alternative premises and practices, and experiment with new ones. 3) The group process involves the sharing of expertise and encourages the development of new understandings and practices. Not only do staff developers share knowledge of the research, teachers share the embedded knowledge of their context, teaching and subject matter. 4) During the course of the staff development, teachers take control and responsibility for the process and content. 5) The process is long-term—at least one semester. 6) The staff developer must be very knowledgeable about what research shows to be effective practice.

Hamilton (1989) described the stages of in the PASD process by describing the conversation of the teachers in discussion groups. In the introductory stage teachers were getting to know each other. They were polite and asked few questions. The breakthrough stage occurred when a person or persons moved beyond the initial way of thinking to a revised way of thinking or doing things. In the empowerment stage, the teachers began to dominate the conversations and take ownership for the staff development itself.

Barbara Morgan (1993) used practical rationality, a process similar to Practical Argument Staff Development, to examine her thinking about the moral question 'How do I decide what is right to do?' In the process of eliciting and reconstructing a practical argument, Morgan fulfilled both diological roles. She concluded the tension that exists between the practical argument and the day-to-day practice of teaching to be a useful one. The demands of teaching are complex and teachers must be able to manage competing and at times mutually exclusive goals. The ill fit between teaching practice and formal

models of teaching can be mutually beneficial, pushing the teacher to make explicit certain reasoning about actions in order that such reasoning can become vulnerable to change.

Constructivist listening staff development like PASD and practical rationality described by Morgan (1993) provides structures for the process of reflection and analysis upon the introduction of new information in the staff development program. It provides the structure to facilitate the creation of the essential trusting environments, leading to deep processing and sharing. It is described in more depth later in this chapter.

Teachers' Orientations to Reading

Bandura's (1986) research showed that the beliefs that individuals held were the best indicators of the decisions that they made. Teachers' orientations to reading (beliefs) became important when it was determined that change in practice was closely associated with beliefs (Bos & Anders, 1994; Clark & Vinger, 1978; DeFord, 1979; Fenstermacher & Richardson, 1993; Gove, 1981; Richardson, 1994). Instructional practices of teachers tended to be consistent with their beliefs about effective instruction (Olson & Singer, 1994). Harste (1977) found that teacher decisions were consistent theoretically and that such decisions matched and predicted teacher behaviors. Watson's study (1984) to observe and describe two reading instruction procedures stemming from the two theoretical influences (skills and whole language) showed that in every category of observable data the teachers adhered closely to their theoretical models. Clearly, literacy instruction was found to be consistent with teachers' theoretical orientations. Students, it was found, also operated out of a consistent theoretical model of reading and their reading strategies relate directly to instructional history.

Thus, to effect change, it appeared important to know what teachers' orientations to reading were, how change could be measured, and what effects change. Interestingly, the literature suggested that beliefs were unlikely to be replaced unless they proved to be inadequate or otherwise unsatisfactory, and that was unlikely to happen unless beliefs were challenged and could not be assimilated into the existing belief system (Posner, Strike, Hewson, & Gertzog, 1982).

Several difficulties arose in identifying and measuring teacher's orientations to reading. One of the difficulties in examining teacher orientations was that of defining beliefs. Clark and Peterson defined beliefs (perspectives) as "a reflective, socially defined interpretation of experience that serve as a basis for subsequent action... a combination of beliefs, intentions, interpretations and behavior that interact continually" (1986, p. 287). Fenstermacher (1986) defines beliefs as propositions accepted as true. Within this framework, beliefs consist of one or more assertions held by the informants and can be realized in the natural language as declarative sentences termed practical arguments.

Another difficulty in identifying and measuring beliefs was that beliefs were not directly observable, resulting in researchers relying on self-report instruments, observation of practice, or teachers' describing what they believe. The literature suggested that care should be taken in how these beliefs were investigated. For example, earlier work (Duffy, 1981; Hoffman & Kugle, 1982) has been criticized on methodological grounds because it relied exclusively on paper-and pencil tests. Two self-report instruments were developed to identify teacher beliefs about reading. In the development of the instruments, special attention was paid to making certain that

teachers' responses on the self-report scales were consistent with observed practice. The two self-report instruments that identify and categorize teacher beliefs about reading and practical arguments are described next.

One instrument used to identify and categorize teacher beliefs about reading is the Theoretical Orientation to Reading Profile (TORP). Another way to investigate teacher beliefs about reading is to administer the Literacy Orientation Survey (LOS). The final method to be considered in this study is that of evaluating teachers' constructing practical arguments about reading. A discussion of these tools follows.

Theoretical Orientation to Reading Profile. Teachers' beliefs about reading (orientations to reading) were illuminated by DeFord (1985) through the development and administration of the Theoretical Orientation to Reading Profile (TORP). The TORP categorized teachers' orientations according to their teaching philosophies: Phonics, Skills, or Whole Language. Altwerger, Edelsky, and Flores (1987) explained that whole language is "an overriding theory and point of view about language, literacy and content learning" (p.144).

On the TORP, participants are asked to respond to 28 statements of belief about reading instruction using a five point Likert scale from one (strongly agree) to five (strongly disagree). Three sample items (DeFord, 1985) follow:

> 1.Being able to label words according to grammatical function (noun, etc.) is useful in proficient reading.
>
> 2. When coming to a word that is unknown the reader should be encouraged to guess based upon meaning and go on.
>
> 3. An increase in reading errors is usually related to a decrease in comprehension.

Possible TORP scores range from 28 to 140; scores of 28-65 indicate a phonics orientation, 66-110 a skills orientation, and 111-140 a whole language orientation. A positive relationship between teacher endorsement of developmentally appropriate practices and a whole language theoretical orientation to reading was indicated in a study (Ketner, Smith, & Parnell, 1977) using the TORP and the Primary Teacher Questionnaire (PTQ), a tool designed to identify developmentally appropriate practices. Central to the developmentally appropriate practices perspective is the notion that children should be in control of their own learning, reflecting the constructivist belief that students are active participants in and contributors to their own development as they mentally, physically, and socially explore objects, events, and people in their environment. Such rich interaction results in the students constructing their own understanding rather than merely receiving knowledge from adult-arranged experiences.

DeFord's (1985) work served as a foundation for the development of the Literacy Orientation Survey. The whole language approach, based on the premise that children construct meaning in natural contests in which writing, reading, listen, and speaking are integrated is correlated with the constructivist orientation on the Literacy Orientation Survey. There is high positive correlation between results on the Theoretical Orientation to Reading Profile and the LOS (Wham, 1996).

Using TORP and the PTQ, Ketner, Smith and Parnell (1997) found that neither higher level training nor greater years of overall experience were related to classroom practices compatible with a whole language approach. However, the grade level taught had a significant effect on all of the scores associated with the PTQ but on none of the scores associated with the TORP. They also found that kindergarten teachers endorsed

developmentally appropriate practices at a significantly higher level than did teachers at other grade levels.

Literacy Orientation Survey. The Literacy Orientation Survey (LOS) is an instrument that can be used to monitor teachers' development toward constructivist teaching in literacy. The self-report instrument provides a score along a continuum that gives a picture of the degree to which the teachers' beliefs and practices are consistent with constructivist philosophy.

Expanding the work of DeFord and working with concepts identified in guidelines developed by the National Association for the Education of Young Children (NAEYC) that provide a framework for programs serving young children, Lenski, Wham and Griffey (1998) developed the Literacy Orientation Survey. Piaget's theory of cognitive development (Bredekamp, 1987; DeVries & Kohlberg, 1987) underpins the constructivist oriented, developmentally appropriate approach to teaching reading defined in the guidelines; thus, the LOS is an instrument that teachers can use "to monitor their own development toward constructivist teaching in literacy" (Lenski, Wham, & Griffey 1998). Self-report responses yield "beliefs" and "practice" scores that identify teachers' orientations to reading on a continuum from traditional to eclectic to constructivist.

To measure the construct of literacy beliefs and practices in constructivist classrooms, a series of steps, the initial being to define the practice of constructivism in terms of literacy, were taken. Answers to the four basic questions led to development of ten principles upon which the LOS was based.

Questions:

- What do constructivist teachers believe about literacy learning?

- How would instruction be organized and delivered by a teacher who believes in constructivist principles?
- What does the teaching environment in a constructivist classroom look like?
- How would differences between traditional approaches to learning and constructivist approaches be revealed in classroom practice? (Wham, 1996, p. 5).

Using the five guiding principles identified by Brooks and Brooks (1993) in their book, The Case for Constructivist Classrooms, Wham, et al. (1966), developed the ten principles.

The teacher

- views literacy as a meaning-making process.
- facilitates child-centered instruction.
- creates an environment conducive to developing literacy skills.
- provides effective instruction in strategic reading practices.
- facilitates student writing.
- employs flexible grouping
- provides instruction through a thematic approach that integrates subject matter across the curriculum.
- encourages parental involvement.
- encourages ongoing reflection.

The LOS was designed to measure what teachers believe about literacy learning and what they do in their classrooms. The combined scores for beliefs and practices subtests give teachers as sense of whether they tend to be a traditional, eclectic or constructivist teacher. Basically, the Literacy Orientation Survey shows teachers whether

they tend to break instruction into parts, assuming that students will assemble the parts to construct the whole. Or, whether teachers begin with a broader format for facilitating reading, stopping to provide mini-lessons on the parts (skills) when students' performance indicates they need instruction in a specific skill.

Forty-two classrooms were used as a basis for process verification. From knowledge about the classroom, observations, and interviews of teachers, researchers determined which type of teaching approach characterized the classroom. Specifically, the researchers' decisions were based on the following descriptors stated by Lenski, et al. (1998):

> In traditional classrooms, reading instruction is based on the assumption that children develop literacy by mastering a series of discrete skills. These skills are presented in a structured sequence from simple to complex. Materials used for instruction are designed to teach component skills of reading in a sequential fashion usually encapsulated into a basal reading series. Assessment is usually provided by the publisher of the series and is intended to measure mastery of the presented skills. Students frequently do exercises in phonics workbooks and are expected to read aloud without error. The underlying assumption is that a child first learns to read and later reads to learn (Chall, 1983). In traditional classrooms, writing is viewed as a separate process, made up of its own composite of skills to be mastered. Desks in

the classroom are usually arranged in rows and students are urged to work quietly and independently.

A teacher whose instructional approach is eclectic combines traditional elements with some constructivist components. Although literature books may be used for reading instruction, the lessons are frequently skill driven or "basalized." Writing activities are frequent but content is usually determined by the teacher with the use of story starters. During writers' workshop, students are instructed to work independently. Although the teacher frequently appears to have a large repertoire of material, "being eclectic" according to Edelsky, Alltwerger, and Flores (1991), frequently means something "like holding...an unexamined underlying theoretical position, borrowing typical practices from conflicting positions while unwittingly and inevitably distorting them so they find the one unacknowledged position" (p.44).

In constructivist classrooms, the ten principles around which the LOS was created are evident. Students are immersed in literature, instruction is delivered in large blocks of time, frequently in thematic units, and students are viewed as partners in the learning process. Writers' workshop is a daily event, and behavior

management often seems to be a non-issue because students are involved in the curriculum. Invented spelling is encouraged and accepted and student choice is evident (Lenski,Wham, & Griffey 1998, p. 7).

Results from self-report surveys from the 42 classrooms in the process verification study were compared using Analysis of Variance. The results were significant (F-66.01, $p<.01$). A Levene Tests for homogeneity of variance was conducted to determine whether the group sizes (six traditional, 17 eclectic, and 19 constructivist) affected the inferential analysis. No significant difference between groups ($p >.455$) was found.

The LOS scores for the participants were: traditional (M 102.5, SD 5.2), eclectic (M 117.2, SD 5.1, and constructivist (M 131.6, SD 6.4). The conclusion drawn by the researchers following these additional tests was that the LOS consistently predicted actual classroom practice (Lenski, Wham, & Griffey, 1998).

The literacy orientation is determined by plotting LOS scores on a continuum. Following are the directions that are printed on the instrument: "If your score is in the 90-110 range, you are most likely a traditional teacher. If your score is in the 111-125 range, you are most likely an eclectic teacher. If your score is in the 126-145 range, you are most likely a constructivist teacher." Beliefs scores are plotted on a line from 45-72. A score closest to 51 indicates beliefs similar to a traditional teacher. A score closest to 61 indicates beliefs similar to an eclectic teacher. A score closest to 69 indicates beliefs similar to a constructivist teacher. For Practice scores, a score closest to 51 indicates

practices similar to a traditional teacher. A score closest to 56 indicates practices similar to an eclectic teacher and a score closest to 63 identifies practices similar to a constructivist teacher.

Practical argument. A practical argument is a statement (written or spoken) of beliefs about a particular topic that may or not contain premises or support. It is a product of reflection, the deliberative reconsideration of practice. A practical argument "begins with the expression of desired end-states such as seeking to develop a sense of honesty, fair-mindedness, and mutual regard in the learner" (Fenstermacher 1987, p.416). The term was coined by Thomas Green (1976) as he considered what competencies teachers needed to instruct successfully.

A practical argument value premise is a "statement of the benefit or good to be derived from an action [which]. . . may be phrased as a declarative statement (My goal is to help children become successful human beings:, or as an imperative (Every child must learn to read)" (Richardson, 1994, p. 34,35).

A practical argument stipulative premise statement contains "reasons teachers offer in explanation or support of their actions" (Fenstermacher, In Richardson, 1994, p.35). This premise incorporates the ways teachers make meaning out of their work. They are not expressive of sought-after outcomes, nor are they empirical in character; thus they are neither value nor empirical premises. For example, a teacher claims that reading is being able to accurately read aloud a passage of text. This claim has the form of a definition. It is not a testable claim, rather it expresses the meaning the teacher gives to the student's being able to read.

A practical argument empirical premise is a "statement or set of statements that make a claim about the world, and is thus subject to scrutiny, usually in the form of a test of some kind" (Fenstermacher, In Richardson 1994, p.35). An example is the teachers' contention that students whose parents read to them when they are young will learn how to read faster than students whose parents did not read to them.

A practical argument situational premise describes the context in which the teacher's action takes place" (Fenstermacher, In Richardson, 1994, p.35).

Literacy Orientations of Pre- and Inservice Teachers

What has been determined about the orientations to reading of pre and inservice teachers? A review of studies utilizing the TORP show a predominant the skills orientation. In 1978 a study (Stansell & Hubert 1978) among 207 preservice teachers was conducted to discover their patterns of theoretical orientations to determine whether there were differences between elementary and secondary program majors. It was found that there was a significant tendency to prefer a skills orientation in each subgroup and in the entire sample. There were no significant differences between the subgroups.

A national study using the TORP (Schaeffer, et al., 1995) designed to ensure representation from each region of the country identified and measured teachers' orientations to reading. To get a broad, representative sample, the United States was divided into four regions: East, South, Midwest, and West. The states randomly selected from each region were Maine and Pennsylvania from the East; Florida, Mississippi and Texas from the South; Illinois, Iowa and Missouri from the Midwest; and California and Oregon from the West. Using current school directories obtained from the state offices of education a sample of districts with probability of selection proportional to their size

were selected. A sample of 32 districts was drawn. Individuals in 71 schools were contacted and asked to give current lists of faculty members. From that list invitations were issued to every teacher in the consenting schools. Although 387 teachers (one out of every six) needed to respond to guarantee a 95 percent confidence level and a 4.5 percent margin of error, 418 surveys were returned. Hence the final margin of error was only 4.1 percent. The majority of teachers (59 percent) were between the ages of 36 and 55, with 32 percent being 35 years or younger and nine percent being older than 55. Approximately one-third of the teachers had between six and fifteen years teaching experience, with 27 percent having fewer than six years of experience and 39 percent having 16 or more years of experience. To determine if additional preparation had influenced their responses, teachers were asked to indicate if they held a master's degree or an advanced certificate or endorsement in reading. Approximately 73 percent of the teachers who responded had either a master's degree in reading or a reading endorsement or certificate. Most of the teachers (65 percent) indicated that their graduate degree or endorsement program had influenced their classroom practice in literacy teaching. Approximately 72 percent of the teachers reported having had inservice experiences in language arts within the last year. The vast majority (73.2 percent) were in the skills orientation according to the TORP scores, with two tenths of one percent in the whole language orientation. A significant finding was that there was a relationship between TORP scores and the year of teaching experience. Teachers with more experience scored lower on the TORP ($p=0.021$). These data may indicate that teachers who had been in the field of teaching longer were more apt to have a phonics orientation. Teachers' mean score on the TORP was 71.82 with a standard deviation of 10.41. Since many of the

veteran teachers may not have had the opportunity to learn about whole language philosophy, it is understandable that they did not espouse it.

In summary, the vast majority of teachers across the nation (73.2 percent) were found to be skills oriented in their views of reading instruction. These findings are similar to those of Levande (1989), who conducted a study in five schools within a single district and found 72 percent of surveyed teachers were skills oriented and 10 percent whole language. The nation-wide study sited above found only two percent of teachers were in the whole language category. Feng and Etheridge (1993) found three and one tenth percent expressed whole language beliefs. No studies in the United States have found whole language percentages as high as the 16 percent of British infant school teachers (Miller, 1990). Mean scores for teachers in urban regions were more toward the phonics end of the spectrum when compared to scores of teachers in rural areas. Comparisons among TORP studies using mean scores yielded no significant differences between the results for the national survey and studies done by Hoffman and Kugle (1981), by Gove (1983), and by a state-wide Utah study (Scheaffer, et al 1995). It was concluded that teachers in the national study have the same skills orientation as teachers in other studies reporting means.

Richards, et al. (1987) found that teachers with more diverse experience and training were more likely to endorse a whole language approach than were teachers with less experience, who were more likely to endorse a phonics approach. Yet, there are contradictions. Teachers who have just recently completed their study may have had more exposure to whole language and thus be more inclined toward the whole language

approach and teachers who favored the whole language approach were more likely to have had graduate-level training (Pesce, 1990; Troyer and Yopp, 1990).

Some research supports the claim that teachers teach they way they were taught and that prior experience influences teachers' orientations to literacy. In an exploratory study that investigated the social construction of four preservice teachers' O'Callaghan (1997) found that in a cross-case analysis of preservice teachers that these student teachers' instructional strategies for reading were rooted in their own experiences as students learning to read. All four participants espoused a skills orientation to reading on the TORP.

A descriptive study (Feng & Etheridge, 1993) used survey methodology to determine first-grade teachers' theoretical orientations toward reading. Results indicated that: (1) of the 259 teachers, the majority (84.59 percent) held a skills orientation, while only eight (3.10 percent) held a whold language theoretical orientation to reading. (2) the majority of teachers taught in a manner consistent with their theoretical orientation to reading. (3) all teachers consistently identified their own classroom experiences as the single most important influence in what they believed about reading and reading instruction and (4) there was no significant difference in students' reading attitude with respect to teachers' theoretical orientation to reading and reading instruction. Findings suggested that the provision of practical strategies without theory may lead to misimplemention or no implementation at all, unless teachers' beliefs were congruent with the theoretical assumptions of practice.

A study of the theoretical orientations to reading of teachers who instruct special needs students (Meyerson & Van Vactor, 1992) found that on the Theoretical Orientation

to Reading Profile, teachers in the study were not strongly associated with any one theoretical orientation but tended to be eclectic.

A South Dakota study (Zalud, 1992) of elementary and middle grade teachers found that 75 percent had a "skills" orientation, 21 percent had a "phonics" orientation to reading and four percent had a "whole language" orientation on the TORP.

The conceptual frameworks of reading held by teachers were investigated (Gove, 1981) in a two-phase study. In the first phase of the study, 66 teachers were given the TORP. In the second phase, 20 teachers whose TORP responses indicated a range of instructional emphases on the continuum were administered the Conceptual Framework of Reading Interview, an instrument designed to elicit specific beliefs within construct systems. Based on their responses, the teachers were identified as holding moderate or strong bottom-up or moderate or strong top-down conceptual frameworks. Analysis of the responses revealed that teachers with strong bottom-up belief systems tended to emphasize lower order units instructionally and to believe that students learn to read by learning decoding skills. Those with moderate bottom-up beliefs emphasized sounds, letter, and words instructionally. Moderate top-down teachers also believed that students learn to read by learning decoding skills; however, those holding both moderate and strong top-down position believed that students learn to read by reading meaningful materials. Those holding a strong top-down position emphasized higher order units instructionally. In the results of this study one sees the continuum of the traditional to constructivist philosophy.

Two other tools to identify literacy orientations are the Conceptual Framework of Reading Interview (Gove, 1983) and a self-report instrument called the Attitudes Toward

Content Area Reading (ATFCAR) yield results that also show responses on a continuum from phonics and skills to whole language. Results are consistent with the findings from the TORP and LOS.

Change in Literacy Orientation

Attempts to move teachers from a phonics/skills orientation to whole language—from traditional to constructivist orientation may be categorized as those relating to projects with preservice and those with inservice teachers.

Preservice studies. The impact of undergraduate methods courses and the influence of the cooperating teachers in elementary classrooms studied by Strickland (1990) yielded results that indicated that students were influenced by the philosophies of their university professors and many were open to new ideas and philosophies while very few students were influenced philosophically by what they saw happening in the classroom. Subjects for the first part of the study were 14 undergraduate students enrolled in a methods course. Subjects for the second part of the study were 12 students who had recently completed the same methods course and were participating in their field experience in a suburban public school three days a week for five weeks. Data were collected through administration of the TORP at the beginning and end of the semester, several reaction papers written by students, and observations and conversations with the cooperating teachers. The study also found that many students left methods courses with no orientation or philosophy about reading and the amount of influence cooperating teachers had on the students varied widely.

Roos et al. (1993) studied the usefulness of the TORP in measuring preservice teachers' change in theoretical orientation to reading as a result of having taken a reading

literature-based whole language methods course. Results were compared for the experimental group, 27 upper division elementary education majors and the control group of 15 upper division students enrolled in an elementary level curriculum course. Results indicated an increase in the posttest TORP scores in the direction of a skills/whole language orientation for the experimental group, suggesting a movement away from a subskills or phonics perspective on the continuum to either a skills or whole language theoretical orientation.

The effect of an undergraduate reading specialization program for preservice teachers enrolled in it (Stansell & Robeck,1979) showed the following: introductory courses tended to move students scores on the TORP from a phonics to a skills orientation; language and reading courses tended to move students toward a whole language orientation; and the orientation of students completing the program tended to remain with the range for a skills orientation unless they had the language and reading course in which case their orientation shifted toward a whole language approach.

Preservice elementary teachers in an elementary reading methods course were studied (Johnson, & Evans, 1991) to investigate the influence of a "real school" practicum during the first half of the semester. Data relative to theoretical orientations of students in cognitive apprenticeships indicated that the six-week practicum experience did not appreciably influence the student teachers' theoretical orientations to teaching reading. However, among the recommendations for the next phase of the study was that of examining the degree to which each preservice teacher's initial theoretical orientation agreed with that of the supervising teacher.

Inservice studies. A staff development program based on whole language philosophy that was implemented in a rural Florida elementary school included voluntary participation in weekly meetings in which teachers were provided with whole language strategies and access to research material. Analysis of pre- and post-tests for the Theoretical Orientation to Reading Profile and other data showed not only significant gains in teacher agreement with whole language philosophy, but also improved group unity and increased willingness to utilize the methods in the future (Hurst, 1991).

A study (Scheffler, et al.,1993) to examine the shifts in teachers' theoretical orientations to reading examined the direction, durability and dynamics of affected shifts in teachers' theoretical orientation to reading after a two-day whole-language workshop found that teachers moved away from initial beliefs as to how reading should be taught and retained this distance but did not move with consistency toward an alternative orientation.

The usefulness of using the format of a summer workshop to effect significant change in teacher beliefs was substantiated by Bean, Bishop and Leurer (1982) when they examined the change in teachers' orientations to reading as reported on the TORP as a result of nine day summer workshop. The results on the TORP for the subjects, 12 elementary school teachers who attended the workshop on teaching reading and language arts in the primary grades were compared to scores of teachers in a control group, teachers enrolled in a concurrent unrelated workshop. The results indicated that the reading/language arts workshop participants significantly altered their pretest beliefs about the reading process towards a whole language orientation and away from an isolated phonics orientation. The control group's orientation did not change significantly,

supporting the view that it was, in fact, the content of the reading workshop that was responsible for the attitude change.

Although I found little in the literature relating to the strategies that would result in teacher change in literacy orientation, there have been some positive results. It is evident that much more study is needed.

Constructivist Listening in the Change Process

Constructivist listening is a tool to facilitate reflection and personal and professional growth by addressing the influence of feelings on thought and action. It may best be defined by distinguishing it from other acknowledged forms of listening (Weissglass,1990, p. 355). (A) Active listening—listening frequently recommended by counselors for problem solving in relationships in which the listener reflects back her or his "impression of the expression of the sender" by paraphrasing or interpreting what the talker is communicating. (B) Passive listening—the listener doesn't say anything, but indicates interest and attention by maintaining eye contact and responding with a non-verbal acknowledgment like a nod or smile. (C) Inattentive listening—e.g., listening while engaged in something else like reading the newspaper. There is little or no attempt to comprehend or respond. (D) Pretend listening—a person maintains facial expressions and is quiet, but is thinking about something else. (E) Conversational listening—the roles of the talker and listener alternate frequently and the person listening is allowed, even expected, to interrupt and express a point of view. (F) Argumentative listening—similar to conversational listening but more passionate with the listener looking for flaws in the talker's argument.

Constructivist listening, in contrast, is a type of listening in which the listener listens attentively without paraphrasing, interpreting, questioning or in any way interrupting the talker. From the constructivist perspective, learning is a product of self-organization and the purpose of constructivist listening is to facilitate this self-organization. Typically there is a prompt for a constructivist-listening session when participants are learning the process. The talker is encouraged to reflect on the meaning as interpreted from the prompt; express and work through feelings that are interfering with clearer thinking, resulting in the construction of new meanings and understandings. Confidentiality is strictly maintained, since a goal is to create a safe environment in which the participants can reflect and honestly process feelings and emotions (Weissglass, 1990). See Constructivist Listening in the Appendix.

Weissglass described constructivist listening as a method of allowing people to talk about what they think is important and to regain access to inherent human capabilities of healthful emotional expression. It attempts to provide an appropriate place for the expression of emotions and in-depth exploration of issues involving personal or professional change. The emphasis on the expression of feelings is based on the belief that these processes reduce stress and assist in the construction of new meanings. In the education setting it provides a way for usually unheard voices to have equal time in a profession that promotes argumentative and conversational listening. Interruptions are common, advice and opinions are feely given, and there is a tendency to ignore and further shut down quiet voices or take the conversation in another direction. In constructivist listening, the talker is always in charge and takes responsibility for deciding what to talk about, at what rate to proceed, and what conclusions to draw.

Because criticism (and sometimes ridicule) has made most people reluctant to openly express feelings, formal structures are recommended to teach people the constructivist listening process. One constructivist listening structure is the dyad. Two people agree to take turns listening and talking for equal amounts of time, the underlying beliefs being that everyone deserves attention and all are capable of solving their own problems. Because a person needs safety to be authentic, confidentiality is required. The listener is not to talk about what the talker has said to anyone else or even bring it up to the talker at a later time. In turn, because the process works best when the listener does not feel defensive or attacked, the talker is not to criticize or complain about the listener or mutual acquaintances. To complete the constructivist listening process, participants frequently are asked to write a response to the prompt and dyad. The reflection that takes place before and during the writing adds to the construction of new understandings, facilitating change (Weissglass, 1990).

Constructivist listening has surfaced as a tool for empowerment, community building and educational change (Weissglass, 1990). It enables teachers to think of themselves and their schools as centers for learning and change rather than as the target of change efforts of others. It enables people to assume responsibility for their actions and feelings. It fosters teacher collegiality and helps to reduce stress. It is non-hierarchical and non-authoritarian, promoting the foundation of meaningful alliances. Talking and expression of emotion about experiences facilitates the construction of new meaning and reduces the influence of past experience on present actions. Weissglass found that, for example, the process of constructivist listening can lessen the tendency to

teach as you were taught or to parent as you were parented and deepen the commitment to carry out decisions to act differently (Weissglass, 1990).

Checking the literature to find documentation for use of the constructivist listening in addition to the Weissglass studies yielded an interesting study outside the education field. A constructivist framework based on constructivist listening, interpretation and dialog was used to initiate collaborative research and development among farmers, researchers and advisers. The method overcame polarized, conflictual communication about sustainable land use. Additional research by Inverness, the group contracted to evaluate the National Science Foundation projects directed by Julian Weissglass through the Center for Education Change at University of California Santa Barbara funded by NSF supports the claim that constructivist listening does impact teacher change. Evaluation of results from the Equity in Mathematics Education Leadership Institute, a nation-wide project to improve leadership in mathematics education leads to the conclusion that constructivist listening structures can make a significant difference in educator beliefs.

Summary

Teacher change, a component of general school improvement, requires attention to more than has typically been addressed in traditional staff development. In addition to the content that has typically been "served", understandings and relationships need to be built and collaboration nurtured. Attention must be paid to adult needs and preferences in the learning process. Structures to develop understanding and trust among teachers, facilitate honest communication and deep-processing of new information, and provide

avenues to deal with feelings that arise with the introduction of information that is contrary to beliefs held may facilitate the teacher change process.

CHAPTER III

Methodology

Research Approach and Rationale

A quasi-experiment, mostly quantitative approach was used to evaluate a staff development project the purpose of which was two-fold: to inform teachers of constructivist teaching strategies in reading, and to move teachers toward a constructivist orientation to reading.

Three conditions were believed to need attention when it was determined that students were not reading with desired proficiency. First, teachers indicated they had not had adequate opportunity to learn research-based practices either in their teacher education programs or through professional development. Second, there were no structures for expertise that did exist in the district to be shared in an effective manner. Third, processes to aid teachers in dealing with feelings that surface in the change process were not in place. In the effort to assist teachers to construct new understanding about reading skill acquisition, it was decided it would not only be important to provide new information through exposure to research and best practices, but also to increase communication across building lines and provide a means for teachers to identify and possibly voice their feelings and beliefs. Although administrators indicated that significant knowledge and understanding about effective reading instruction was demonstrated by some teachers in the district, administrators and teachers reported very

little sharing had taken place. To begin to break down the barriers that inhibited sharing, the project required teachers to meet with teachers from other buildings.

This study confined itself to evaluating data gathered when twenty-five regular education teachers in the Del Norte Public Schools were involved in a district staff development project designed to improve teachers' ability to facilitate student reading. In return for volunteer participation, each teacher was awarded three semester hours of college credit with stipends courtesy of Adams State College Extended Studies Program.

Characteristics of Participants

The participants in the study were representative of the faculty of the Del Norte Schools teaching in grades two through high school. Specifically omitted from this study were the kindergarten and first grade teachers, because the strategies and techniques covered in the project were targeted to "older" students. The content was not initial reading instruction nor was it early intervention strategies but rather intervention strategies for older students—students who had experienced reading instruction for several years and were still not readers or were marginal readers.

The teachers participating in the project self-identified as teachers who wanted to increase their capacity to facilitate reading comprehension for "older" students. Table 1 displays the distribution of teachers by teaching level, perceived level of preparedness to facilitate reading comprehension, years teaching experience, learning style (Kolb Learning Style Inventory) and amount of previous training in strategies to help students increase reading comprehension. Notice that fifty-six percent of the teachers indicated they had very little previous training-- one, two, or no previous reading training. Sixty-four percent of the teachers reported ten years or more of teaching experience. The most

Table 1

Selected Characteristics of Teachers Involved in the DNS Staff Development Project

	n	%
Distribution by teaching level		
Elementary (2-5)	10	40
Middle/High (6-12)	15	60
Distribution by perceived level of preparedness to facilitate reading comprehension before the intervention		
Not prepared	0	0
Little prepared	6	24
Generally prepared	11	44
Very well prepared	8	32
Distribution by years teaching experience		
Less than 5 years	5	20
5—9 years	4	16
10-14 years	5	20
15-20 years	6	24
More than 20 years	5	20
Distribution by learning style[a]		
Accommodator	3	13
Diverger	4	17
Converger	7	31
Assimilator	9	39
Distribution by previous training		
No previous training	3	12
1 previous training	7	28
2 previous trainings	4	16
3 previous trainings	2	8
4 previous trainings	2	8
5 previous trainings	2	8
6 previous trainings	2	8
7 previous trainings	1	4
8 previous trainings	2	8

[a] Two participants did not adequately complete the inventory, resulting in the missing percentage. Percent is calculated for the 23 who completed the inventory.

often identified learning style was the assimilator, with strengths being planning, creating models, defining problems and developing theories.

Measures

The variables were orientation to literacy, learning style, gender, assigned teaching level, perceived level of preparedness to address needs of students with low reading comprehension, amount of previous training, comfort level with dyad process, and number of years teaching. Measures were the Literacy Orientation Survey (LOS), Learning Styles Inventory (LSI), and Practical Arguments (PA).

Literacy Orientation Survey (LOS). This is an instrument that assesses teachers' beliefs about literacy learning and classroom practices. It is a 29 item self-report Likert-type scale that yields scores of teachers' theoretical orientations to the reading process on a continuum with points ranging from traditional to eclectic to constructivist. Sub scores for Beliefs and Practice can be combined to yield a composite LOS score. Score range is 29-145. Scores that fall between 29 and 99 are considered to indicate teachers have a traditional orientation to reading. Scores between and 100 and 119 indicate an eclectic orientation. Scores between 120 and 145 indicate a constructivist orientation. The mean for the LOS, the pre-training literacy orientation survey, was 115.4 with a standard deviation of 8.77. The Beliefs mean was 62.84 with a standard deviation of 4.22. The Practices mean was 64.0 with a standard deviation of 7.02.

When taking the survey, participants are directed to "read the statements and circle the response that indicates your feelings or behaviors regarding literacy and literacy instruction." Responses may range from (1) to strongly disagree to (5) strongly agree or from (1) never to (5) always, depending upon the type of question. Two sample

statements follow: "Students should use 'fix-up strategies' such as rereading when text meaning is unclear." "I encourage my students to monitor their comprehension as they read." Higher scores on the LOS indicate a constructivist orientation.

The Literacy Orientation Survey (Wham,1996) was developed to clarify connections between literacy beliefs and practice. To develop construct validity of the LOS, definitions of the ten principles of constructivism were refined. Working independently, Wham and Lenski developed items for a preliminary bank of survey items designed to test the principles. They then wrote belief statements that were theory-based and then developed statements that would translate each belief into classroom practice. Next they combined their preliminary items and discussed how well each one fit the ten principles. Finally, following re-writes for clarity and discussion, 118 items upon which they had 100 percent agreement were retained. Approximately half of the statements focused on belief and half on practice.

Content validity of the LOS was further developed by a panel of 20 experts in literary instruction who reviewed the items, judging how well items reflected principles of constructivist approaches to literacy instruction. A draft survey of 44 items was administered to 110 teachers. Responses were factor analyzed. Thirty items, 15 belief statements and 15 practice statements that respectively loaded at a .80 level were retained. The resulting LOS survey was administered to 30 different teachers in order to determine the reliability of the instrument. The Cronbach alpha reliability coefficient for the whole instrument was computed as .927. The LOS was subsequently administered to 95 teachers. Correlation between belief and practice items was .65. While the LOS was determined to have robust internal consistency reliability, questions remained about

external validity of teachers' self-reports. To assess criterion validity 42 teachers were observed during actual classroom instruction. They were categorized as traditional, eclectic or constructivist based on indicators used during the observations. The LOS was administered to these same, 42 teachers. LOS scores, for each teaching category, were compared using analysis of variance. The assumption of homogeneity of variance across groups was confirmed (Levene Test). A significant ANOVA ($F=66.01$, $p<001$), resulted in the conclusion that the LOS consistently predicted actual classroom practice. On a continuum, a traditional orientation is identified by a score at the lower end of the scale, the higher score denotes a constructivist orientation, with eclectic between the two.

Learning Style Inventory (LSI). To assess individual orientations toward learning, the Learning Style Inventory was developed. This instrument, a self-description questionnaire, evaluates the ways a person learns and how he or she deals with ideas and day-to-day situations. Tabulating answers given to sentences each with a choice of four endings, yields scores that fall into four basic learning modes: Concrete Experience ("feeling"), Reflective Observation ("watching"), Abstract Conceptualization ("thinking"), and Active Experimentation ("doing"). Descriptions of the modes as defined by Kolb (1984) follow. Figure 1 shows the quadrants for the learning styles.

One mode, the orientation toward concrete experience, focuses on being involved in experiences and dealing with immediate situations in a personal way. It emphasizes feeling as opposed to thinking; a concern with the uniqueness and complexity of present reality as opposed to theories and generalizations; an intuitive, "artistic" approach as opposed to a systematic, scientific approach to problems. Further, people with concrete-experience orientation enjoy and are good at relating to others, frequently are good

intuitive decision makers, and function well in unstructured situations. Others see this person as having an "open-minded approach to life." Another mode is an orientation toward reflective observation. The focus is on understanding the meaning of ideas and situations by carefully observing and impartially describing them. Emphasizing an understanding rather than a practical application, a person with this orientation is concerned with how things happen as opposed to what will work; an emphasis on reflection as opposed to action. Good at looking at things from different perspectives and appreciating different points of view, people with an orientation toward reflective observation generally rely on their own thoughts and feelings to form conclusions. They value patience, impartiality and considered, thoughtful judgment. Those persons having an orientation toward abstract conceptualization focus on using logic, ideas, and concepts. Thinking as opposed to feeling is emphasized as is building general theories as opposed to intuitively understanding unique, specific areas. Approaches to problems are scientific rather than artistic. People with this orientation value precision, the rigor and discipline of analyzing ideas, and the aesthetic quality of a neat conceptual system. The final orientation, although listing does in no way signify a hierarchy, active experimentation, emphasizes practical applications as opposed to reflective understanding; a pragmatic concern with what works as opposed to what is absolute truth; an emphasis on doing as opposed to observing. People with an active experimentation orientation are good at getting things done and enjoy doing so. Willing to take some risk in order to achieve their objectives, they also value having an influence on the environment around them and like to see results.

The profile norms for the basic scales of the LSI come from a sample group of 1,446 adults ranging from 18 to 60 years of age. The sample contained slightly more women than men with an average of two years beyond high school in formal education. By combining scores a "learning style type" is determined. Learning style types are Accommodator, Diverger, Converger, and Assimilator.

The combination of scores to identify the learning-style type can be seen in the Figure 1. Drawing a line between scores plotted along the lines for Concrete Experience ("feeling"), Reflective Observation ("watching"), Abstract Conceptualization ("thinking"), and Active Experimentation ("doing") places a person's scores in a quadrant and provides an indication of the extent to which the person relies on each learning style.

Test-retest reliability for the Kolb Learning Style Inventory shows scores for a variety of groups. See Table 2.

Table 2

Test-Retest Reliability Studies for the Learning Style Inventory

		LSI SCALES						
Population	Time BetweenTesting	CE	RO	AC	AE	AC-CE	AE-RO	n
US Students in foreign medical schools	1 month	0.56	0.52	0.59	0.61	0.7	0.55	50
Boston U. senior medical students	3 months	0.48	0.71	0.64	0.64	0.61	0.71	27
MIT MS students in management	3 months	0.48	0.51	0.73	0.43	0.51	0.48	23
MIT MS students in management	6 months	0.46	0.34	0.64	0.5	0.53	0.51	18
MIT Sloan Fellows	7 months	0.49	0.4	0.4	0.33	0.3	0.43	42

Note. Reliability coefficients are Pearson product-moment correlations.

Concrete Experience "Feeling"

ACCOMMODATOR Strengths: Getting things done Leadership Risk-taking Too much: Trivial improvements Meaningless activity To develop accommodative learning skills, practice: ▪ Committing yourself to objectives ▪ Seeking new opportunities ▪ Influencing and leading others ▪ Being personally involved ▪ Dealing with people	**DIVERGER** Strengths: Imaginative ability Understanding people Recognizing problems Brainstorming Too much: Paralyzed by alternatives Can't recognize problems and opportunities To develop Divergent learning skills, practice: ▪ Being sensitive to people's feelings ▪ Being sensitive to values ▪ Listening with an open mind ▪ Gathering information ▪ Imagining the implications of uncertain situations
Active Experimentation "Doing" **CONVERGER** Strength: Problem-solving Decision-making Deductive reasoning Defining problems Too much: Solving the wrong problem Hasty decision-making Scattered thoughts To develop Convergent learning skills, practice: ▪ Creating new ways of thinking and doing ▪ Experimenting with new ideas ▪ Choosing the best solution ▪ Setting goals and making decisions	*Reflective Observation "Watching"* **ASSIMILATOR** Strengths: Planning Creating models Defining problems Developing theories Too much: Castles in the air No practical application To develop Assimilative learning skills, practice: ▪ Organizing information ▪ Building conceptual models ▪ Testing theories and ideas ▪ Designing experiments ▪ Analyzing quantitative data

Abstract Conceptualization "Thinking"

AC= Abstract Conceptualization, CE= Concrete Experience

AE= Active Experimentation, RO= Reflective Observation

Figure 1. The combinations of scores that identify learning styles as determined by the Learning Style Inventory.

Split-half reliabilities for the LSI are better than the test-retest coefficients. Table 3 shows split-half reliabilities obtained by applying the Spearman-Brown prophecy formula to obtained correlations between LSI scale halves for five different groups.

Table 3

Split-half Reliabilities Obtained by Applying the Spearman-Brown Split-Half Reliability Coefficients for the Learning Style Inventory

	n	AC-CE	AE-RO
MIT Sloan Fellows	47	.78	.78
MIT Sloan Fellows	50	.80	.81
Active Managers	90	.78	.85
Harvard MBA's	442	.75	.86
Lesley College Undergrads	58	.86	.82
Total	687	.74	.82

Self-report form. Teachers' perceived level of preparedness to teach reading, amount of previous training in teaching reading and comfort level with the dyad process were measured by self-report on the form that also provided demographic information—gender, assigned teaching level, and years teaching experience. Perceived level of preparedness to teach reading scores were rated on a scale from 1. Not prepared to 4. Very well prepared. Teachers listed their previous training. Their comfort level with the dyad process was rated from 1. I didn't care for it at all! to 5. It was great!

Practical Arguments (PA). Statements to complete this stem were written by teachers: When I think about facilitating student reading comprehension, I believe... Practical arguments are statements of beliefs about a particular topic that may or not contain premises or support. They are products of reflection.

A practical argument "begins with the expression of desired end-states such as seeking to develop a sense of honesty, fair-mindedness, and mutual regard in the learner" (Fenstermacher 1987, p. 416). Fenstermacher groups practical arguments into four categories: empirical, situational, stipulative and value.

Practical argument empirical premise is a statement or set of statements that make a claim about the world, and is thus subject to scrutiny, usually in the form of a test of some kind. An example is the teachers' contention that students whose parents read to them when they are young will learn how to read faster than students whose parents do not read to them. A practical argument situational premise describes the context in which the teacher's action takes place. A practical argument stipulative premise contains reasons teachers offer in explanation or support of their actions. This premise incorporates the ways teachers make meaning out of their work. They are not expressive of sought-after outcomes, nor are they empirical in character; thus they are neither value nor empirical premises. For example, a teacher claims that reading is being able to accurately read aloud a passage of text. This claim has the form of a definition. It is not a testable claim, rather it expresses the meaning the teacher gives to the student's being able to read. Completing the set, a practical argument value premise is may be phrased as a declarative statement (My goal is to help children become successful human beings:, or as an imperative (Every child must learn to read)" (Fenstermacher, p. 34, 1994).

Intervention

The intervention, a staff development project designed to nurture teachers' development of a constructivist orientation to reading, took place during spring semester of 1997. The steps taken to organize the project, the protocol followed by the participants, and the content for the project follow.

Project overview. The school district superintendent announced the opportunity for teachers to be involved in the district-wide staff development project and encouraged all teachers of students in grades 2-12 to participate. Building administrators issued invitations to their teachers, and memos were sent from the staff development office to all district teachers inviting them to join the district learning team.

At the initial meeting with participants in the Board Room in the Del Norte School Administration Building, teachers completed initial surveys and selected components to study from the modules. The components of the modules were composed of research articles and videos about facilitating reading comprehension. After teachers anonymously completed the initial surveys they filed them in their personal folders that were housed in file cabinets in the rooms of a teacher who volunteered from each building.

The project was in no way tied to their evaluation. The staff developers' intent was to create a safe sharing environment. In addition, three semester hours credit were provided by Adams State College on a Pass/Fail basis. When all components were completed and documentation submitted, a grade of Pass was issued.

Since a goal was to foster a safe learning environment that was not viewed as evaluative, at the initial meeting, teachers who served as building coordinators

volunteered to distribute and provide a cabinet to house project materials in their buildings.

When dyads between teachers for the modules were complete, learning-style inventories (LSI) and final surveys (LOS) were filed by the participants in their personal folders. The teachers that volunteered to house the folders in their file cabinets submitted the folders (which included the initial surveys completed 2 ½ months earlier) to the district office. No names or other identification were put on any pieces.

Process. Each teacher met with another teacher at mutually arranged times to read or view module components. Twelve of the twenty modules were studied by each teacher. The duos were changed three times during the study to ensure teachers' worked across grade level lines with three other teachers.

For the meetings there was a set protocol. First, the research module pieces were read and/or viewed. Second, each participant was to talk three minutes after viewing or reading each piece, responding or reacting to the content, using the dyad structure described in "Constructivist Listening for Empowerment and Change" (Weissglass, 1990). Although the responses were to be unstructured, participants were to follow a few specific guidelines. Participants were prompted, in the original directions, to take turns talking for three minutes about how what they read or viewed "fit or did not fit" with what they already knew, express feelings, and pose any questions that came to mind. The listeners were to listen attentively to the talkers without talking. Agreement not to debate, evaluate, advise or question during the dyad response was secured. After both participants completed the talking segment, each reflected upon the session and wrote a reaction/response of 250-500 words. Written responses were made to the components in

all 12 sets of modules. Timers, highlighters, and NCR paper for journaling were provided to each team.

Content. To compile the modules, research labs across the nation were contacted for recommendations for the components of the twenty modules. The resulting modules were comprised of journal articles and videos about effective practice in facilitating reading. Some modules contained all journal articles, some contained videos. The remainder included a combination of articles and videos. For example, for Module #1 each teacher read three articles. For component a, they read Knapp and Turnbull's (1990) document, Better schooling for the children of poverty: Alternatives to conventional wisdom, which is about alternatives to traditional methods of teaching reading that have yielded better results for children of poverty. For component b, they read an article from the Journal of Adolescent and Adult Literacy entitled PLAN: A study-reading strategy for informational text, in which Caverly, Mandeville, and Nicholson (1995) describe a research-based approach that helps students develop an active role in comprehension of content area text. For component c, they read Modifying reading instruction to maximize its effectiveness for disadvantaged students (Garcia & Pearson, 1990), which discusses strategies identified by the Center for the Study of Reading at the University of Illinois.

For a complete listing of the components of the staff development modules see the Appendices.

Background Data Collection

Both anonymous questionnaires including demographic information, the Literacy Orientation Survey, Learning Styles Inventory, and practical arguments about beliefs

about reading were completed by the participants. Data were analyzed utilizing the Statistical Package for the Social Sciences (SPSS).

Design and Analysis

A quasi-experimental single group pre- and post test design was used to determine whether there was a difference in teachers' theoretical orientations to reading following the Constructivist Listening staff development process that spanned a 2 1/2 month period. There was no control group and the sample of teachers participating in the staff development reading research program was small. (N=25). See Figure 2.

The variables measured were orientation to literacy and the sub components, Beliefs and Practices, on the Literacy Orientation Survey. Although there is a general tendency toward introversion in old age, studies show that people tend to retain their relative ranking on the Learning Style Inventory throughout their lifetime (Rubin, 1981) so the LSI was administered only in the pre-test.

Pre	Intervention	Post
Literacy Orientation Survey 1	Staff Dev.	Literacy Orientation Survey 2
Beliefs Subtest 1	Staff Dev.	Beliefs Subtest 2
Practices Subtest 1	Staff Dev.	Practices Subtest 2
Practical Arguments 1	Staff Dev.	Practical Arguments 2
Self-Report Data	Staff Dev.	Self-Report Data

Figure 2. Pre-post Test Design

Research Questions and their analyses:

1. What were the theoretical orientations to reading of a selected group of regular education grade 2-12 teachers?

To describe the theoretical orientations of teachers, descriptive statistics to yield the frequency, mean, standard deviation, minimum and maximum scores were run using scores for the Literacy Orientation Survey (LOS 1), administered before the intervention the Literacy Orientation Survey (LOS 2) which the teachers completed after the training and for pre and post sub scores for Beliefs (BEL 1 and BEL 2) and Practices (PRA 1 and PRA 2). Sub scores for Beliefs and Practice were combined to yield a composite LOS score. Possible score range was 29-145. Scores that fall below 99.5 indicate teachers have a traditional orientation to reading. Scores between and 99.6 and 119.5 indicate an eclectic orientation. Scores between 119.6 and 145 indicate a constructivist orientation. The numbers and percentages of teachers in each category were identified.

2. Do the theoretical orientations of teachers increase (toward constructivist) after participation in the staff development project? Paired samples t tests were run for the pre and post LOS and for the groups of scores extracted from the LOS that comprise the Belief and Practice categories to answer this question. Pair one consisted of the LOS pre and post scores. Pair two, the Beliefs pre and post scores. Pair three, the Practices pre and post scores.

3. Will teachers who initially scored lower (toward the traditional) on the Literacy Orientation Survey make more gains than teachers who scored higher (toward the constructivist)? To test this question independent t tests comparing gain scores for high and low LOS scores were selected. Gain scores for the Literacy Orientation Survey and both subtests were used to compare high and low scorers. Scores were divided at the median to establish the two groups, high and low scorers in each test. To obtain the gain scores, SPSS was utilized to subtract the initial scores from the final scores for the LOS,

Beliefs and Practices scores. Codes assigned for the gain scores were losgain, belgain and pragain.

4. Do theoretical orientations of teachers from some categories of variables of gender, perceived level of preparedness, assigned teaching level, previous training, learning style or comfort level with the dyad process change more than others? To test this question independent t tests comparing gain scores were selected to test the variables of gender, assigned teaching level, learning style, and comfort with the dyad process. To run the independent samples t tests for the variable of learning style, the scores were recoded into two groups. The predominant group of assimilators was assigned the number 1 and the three other groups were combined assigned the number 2. Teaching level was recoded into elementary and middle/high. Comfort level with the dyad process scores were recoded into two groups: teachers who said they were uncomfortable to OK and those that were comfortable to very comfortable with the constructivist listening dyad process.

Pearson (r) was chosen for the variables of perceived level of preparedness and previous training because the independent variables had five or more levels. Teachers rated their perceived level of preparedness on a scale from zero to five and listed their previous training in reading. The range for previous training was from zero to eight.

The practical arguments written by each teacher were counted, coded, and categorized. There were five categories for the statements, because some statements did not fit any category. The statements that did not fit a category were grouped into a new category designated as not being practical arguments. Definitions (Fenstermacher, 1994) for each type of argument were used to create the rubric I used to determine the category

to which each statement should be assigned. See Figure 3. This process allowed some tabulation and evaluation of the qualitative data. It also provided a visual overview of the types of responses teachers gave both before and after the staff development project.

Type of Practical Argument	Description	Code
Empirical Premise	makes a claim about the world, and is thus subject to scrutiny, usually in the form of a test of some kind	E
Situational Premise	describes the context in which the teacher's action takes place.	S
Stipulative Premise	contains reasons teachers offer in explanation or support of their actions	ST
Value Premise	identifies or describes the good or benefit	V
Not a Practical Argument	statement that does not fit any of the above categories	N

Figure 3. The types of Practical Arguments.

Examples of each of each practical argument follow:

Empirical Premise Practical Argument

- If students lack word attack skills and knowledge about the structure of words and then sentences, comprehension is difficult.

Situational Premise Practical Argument

- It is important to provide a wide selection of reading material so that students can select things they are interested in and can relate to.

Stipulative Premise Practical Argument

- I think one of the most important parts of improving students' reading comprehension is making connections between the student's previous knowledge, the student's interest and the text being read because without this connection long term understanding and comprehension will not occur.

Value Premise Practical Argument

- Allowing students the freedom to read for pleasure on their own levels will foster the life-long love for reading.

Not a practical argument

- I've gotten some really good ideas from this class.

After the practical arguments were categorized, they were entered on an Excel spreadsheet to tabulate the numbers in each category for the initial and the post survey. Three participants' arguments could not be used because they were either partially or entirely incomplete. Finally, the data were entered in the SPSS data set and paired samples t tests using gain scores for the Literacy Orientation Survey and both subtests, were run to provide a quantitative analysis of the data.

CHAPTER IV

Results

Introduction

The function of this chapter is to present a description and analysis of data collected from the teacher population involved in a Del Norte School staff development project the purpose of which was to move teachers toward a constructivist orientation to reading. The results of that project are the subject of this study.

This study was undertaken for two purposes. The first purpose was to identify the theoretical orientations to reading of a group of teachers in the Del Norte Schools. The second purpose was to determine whether there was change in teachers' orientations to reading upon the conclusion of a constructivist listening staff development project. A demographic questionnaire, Learning-Style Inventory and the Literacy Orientation Survey were completed by each of the 25 participants before the staff development project was begun. Upon conclusion of the staff development project, the participants completed follow-up questionnaires that again included the Literacy Orientation Survey.

This study confined itself to evaluating data gathered when twenty-five regular education teachers in the Del Norte Public Schools were involved in a district staff development project designed to improve teachers' ability to facilitate student reading. The Statistical Package for the Social Science (SPSS) was used to analyze responses. This chapter contains the demographic information and characteristics of the study group and describes the findings by inspecting the research questions systematically.

Characteristics of Participants

The teacher group that participated in the project reflected the characteristics of the entire staff. However, two points should be noted. First, only teachers of students in grades two and above participated, since the staff development content was facilitating reading comprehension rather than initial reading instruction. Second, the perceived level of preparedness for the group participating was different from the entire staff. The second point will be discussed in Chapter V.

Research Questions

The research questions addressed in this study were:

1. What are the theoretical orientations to reading of a selected group of regular education grade 2-12 teachers?

2. Do theoretical orientations to reading increase (toward the constructivist orientation) after participation in the staff development project?

3. Will teachers who score lower (toward the traditional) on the Literacy Orientation Survey make more gains than teachers who score higher (toward the constructivist)?

4. Do theoretical orientations of teachers from certain demographic categories change more than others?

Analysis of Research Question One

The first research question was answered using descriptive statistics to yield frequencies, means, standard deviations, and minimum and maximum scores for the teachers' scores on the Literacy Orientation Survey (LOS). Table 4 shows that the mean for the LOS pre-training literacy orientation survey was 114.12. The Beliefs subtest

mean was 62.85 and the Practices subtest mean was 51.90. On the initial Literacy Orientation Survey, 16 percent of teachers' scores were in the traditional category, 52 percent fell in the eclectic category and 32 percent in the constructivist category.

Table 4

Means and Standard Deviations for Initial Beliefs and Practices Sub Scores and Total for All Teachers on the Literacy Orientation Survey

Score Type	M	SD
Literacy Orientation Survey (LOS1)	114.12	9.24
Beliefs (Bel 1)	62.85	4.22
Practice (Pra 1)	51.90	9.25

To determine whether there were differences between the scores of men and women and elementary and middle/high school teachers, independent samples t tests were done. Results showed no significant differences for Literacy Orientation Survey mean scores for men and women. Similar not significant results were found for teaching level. See Table 5.

Analysis of Research Question Two

The second research question asked was, "Do theoretical orientations to reading increase (toward the constructivist orientation) following participation in the staff development project?" This question was answered by running paired samples t tests for the pre and post Literacy Orientation Survey and for the scores extracted from the LOS that comprise the Belief and Practice sub score categories. The paired samples t test was

Table 5

Means, Standard Deviations, and t Values on the Initial Literacy Orientation Survey Comparing Gender and Teaching Level

		Literacy Orientation Survey Score			
Group	n	M	SD	t	p
All Teachers	25	114.12	9.25		
Female Teachers	20	113.20	9.56	-.99	.422
Male Teachers	5	117.80	7.59		
Elementary Teachers	10	117.85	9.40	1.71	.896
Middle/High Teachers	15	111.63	2.21		

used to examine whether there was a statistically significant change between the pre test and the post test. The paired samples t test was chosen because the dependent variable was normally distributed interval data and there was one independent variable with two groups.

The LOS 2 mean of 118. 76 is significantly higher than the LOS 1 mean (114.12). There was a statistically significant difference between the LOS 1 and LOS 2 results. (See Table 6.) Similar significant results were found for the comparisons of the practices sub scores (PRA 1 and 2), but there was no difference on the beliefs sub scores (BEL 1 and 2). There was a statistically significant gain between the scores on the first survey and those on the second survey overall. There was significant change in practice and

orientation. See Appendix C for a complete listing of teachers' initial and final LOS and subtest scores and the changes recorded for each.

Change in percentages of teachers' scores in each category on the LOS further illustrates the shift in orientation. The percentage of teachers' scores in the traditional category on the initial was 16%, while on the final LOS the percentage of teachers' scores in that category was only 4%. For the eclectic category, initially 52% of the scores fell in the category as compared to 48% on the final LOS. The percent scores in the constructivist category changed from 32% on the initial survey to 48% on the final.

Table 6

Means, Standard Deviations and t Values for Pre and Post Literacy Orientation Survey Total and Subtest Scores (n=25)

		M	SD	t	p
Pair 1	LOS 1	114.12	9.25		
				-2.56	.017
	LOS 2	118.76	9.82		
Pair 2	BEL 1	62.85	4.22		
				.326	.747
	BEL 2	62.50	5.64		
Pair 3	PRA 1	51.90	7.02		
				-3.487	.002
	PRA 2	56.90	6.34		

Note. LOS 1 is the initial Literacy Orientation Survey, LOS 2 is the post test. BEL 1 is the total Beliefs score for the initial survey, BEL 2 is the post. PRA 1 is the total Practice score for the initial survey, PRA 2 is the post.

Analysis of Research Question Three

The purpose of the third research question was to determine whether teachers who scored lower on the initial Literacy Orientation Survey would make more gains than teachers who scored higher—toward the constructivist. This research question was answered by running independent samples t tests comparing gain scores for the following: high and low LOS scores, high and low Beliefs scores and high and low Practice scores. High and low groups were determined by dividing the scores at the median. The independent samples t test comparing gain scores for high and low Literacy Orientation Survey scores, high and low Beliefs subtest scores, and high and low Practice subtest scores was selected for the following reasons: First, there was just one independent variable, the initial LOS scores. Second, scores were recoded into two levels in the Literacy Orientation Survey and subtests, high scorers and low scorers. Third, the dependent variable, gain scores, was ratio data. The results of the t tests are shown in Table 7. The Levene's Test for the assumption of equality of variances showed that the variances were not significantly different. Because the variances were assumed to be equal, the results from the top line of the printout were used.

Significant differences were found for the LOS gain scores, the Beliefs gain scores, and for the Practices gain scores. Teachers who scored higher on the initial survey (toward the constructivist) gained more than those who initially scored lower. That was opposite of what was expected, because it was believed that teachers who scored lower initially would have more opportunity for growth in understanding in both beliefs and practice.

Table 7

Means, Standard Deviations, and t Values for Gain Scores on the Literacy Orientation Survey Comparing Initially High and Low Scorers

	n	M	SD	t	p
Literacy Orientation Survey low scorers	13	1.19	8.35	-2.12	.045
Literacy Orientation Survey high scorers	12	8.35	8.57		
Beliefs (subtest) low scorers	14	-3.16	4.16	-3.65	.001
Beliefs (subtest) high scorers	11	3.23	4.56		
Practice (subtest) low scorers	12	1.08	4.24	-3.43	.006
Practice (subtest) high scorers	13	8.62	7.55		

Analysis of Research Question 4

Research question 4 was: "Do theoretical orientations of teachers from some categories of the variables of gender, perceived level of preparedness, years of teaching experience, assigned teaching level, previous training, learning styles, previous training, and comfort level with the dyad process change more than others? To test this question for four variables (gender, assigned teaching level, learning style, and comfort level with the dyad process) which were all recoded when necessary into dichotomous variables, independent samples t tests comparing average gain scores were used. I checked for differences in the gain scores for the variables of gender, assigned teaching level, learning style, and comfort with the dyad process using the independent samples t test because the t test provides the ratio of the variance between groups to the variance within the groups, allowing one to see whether two groups' scores differed significantly

on the LOS and sub tests. Pearson correlations r were used for the variables of perceived level of preparation, years teaching experience, and amount of previous training in facilitating reading comprehension.

Gender. There was not significant difference between gain scores for the Literacy Orientation Survey or for the Beliefs or Practices subsets of scores for men and women. See Table 8.

Table 8

Means, Standard Deviations, and Independent Samples t Values Comparing Gain Scores for Men and Women for the Literacy Orientation Survey

	n	M	SD	t	p
Literacy Orientation Survey Gain Scores for Women	20	4.9	9.28	.28	.750
Literacy Orientation Survey Gain Scores for Men	5	3.6	8.96		
Beliefs Subtest Gain Scores for Women	20	-.71	5.38	-.67	.649
Belief Subtest Gain Scores for Men	5	1.10	5.48		
Practice Subtest Gain Scores for Women	20	5.6	7.76	.87	.093
Practice Subtest Gain Scores for Men	5	2.5	3.6		

Learning styles. An independent samples t test using Learning Style Inventory (LSI) scores, recoded into the assimilators, the predominant group, and others, the combination of the other three categories was done to test for differences. The Practice subtest gains for assimilators was small as compared to the combined group which went up. There were no other statistically significant results. See Table 9.

Table 9

Means, Standard Deviations, and Independent Samples t Values Comparing Gain Scores for the Literacy Orientation Survey by Learning Style

	n	M	SD	t	p
LOS Gain Scores for Assimilators	9	1.11	8.31		
				-1.35	.196
LOS Gain Scores for Others	14	6.28	9.30		
Beliefs Gain Scores for Assimilators	9	- .08	5.26		
				.821	.421
Beliefs Gain Scores for Others	14	-1.7	4.60		
Practice Gain Scores for Assimilators	9	1.73	5.25		
				-2.14	.044
Practice Gain Scores for Others	14	7.75	7.27		

Teaching level. To test for differences in gain scores for teachers of elementary and middle/high school students, independent samples t tests were done. Table 10 shows there were not significant differences between the two groups in Literacy Orientation Survey gain scores nor for the Practices subset of scores. There was, however, a significant difference between elementary and high school teachers' gain scores. The elementary teachers' gains scores were up somewhat and the middle/high school teachers' gain scores were down somewhat.

Comfort with the dyad process. To test differences in gain scores between the teachers who said they were generally to very comfortable with the dyad process and those who were neutral or to uncomfortable using the dyads, independent samples t tests

Table 10

Means, Standard Deviations, and Independent Samples t Values Comparing Gain Scores by Teaching Level

	n	M	SD	t	p
LOS Gain Scores for Elementary Teachers	10	6.85	5.79	.997	.329
LOS Gain Scores for Middle/High Teachers	15	3.16	10.63		
Beliefs Gain Scores for Elementary Teachers	10	2.48	4.74	2.36	.027
Beliefs Gain Scores for Middle/High Teachers	15	-2.23	4.98		
Practice Gain Scores for Elementary Teachers	10	6.16	7.91	.650	.522
Practice Gain Scores for Middle/High Teachers	15	4.23	6.81		

Table 11

Means, Standard Deviations, and Independent Samples t Values Comparing Gain Scores by Comfort Level Regarding the Dyad Process

	n	M	SD	t	p
LOS Gain Scores Group: Not comfortable-OK	15	5.83	10.41	.801	.431
LOS Gain Scores Group: Comfortable-Very comfortable	10	2.85	6.61		
Beliefs Gain Scores Group: Not comfortable-OK	15	-1.43	5.18	-1.26	.220
Beliefs Gain Scores Group: Comfortable-Very Comfortable	10	1.28	5.40		
Practice Gain Scores Group: Not comfortable-OK	15	6.76	7.93	1.55	.135
Practice Gain Scores Group: Comfortable-Very Comfortable	10	2.36	5.13		

were done. There were no significant differences between the two groups for LOS overall, Beliefs or Practices subtests. See Table 11.

Perceived level of preparation, previous training and previous teaching experience. Because both the independent variables and the dependent variables provided interval data with five or more levels that statistic was chosen. Teachers rated themselves on a scale from 1 to 5, not prepared to very well prepared, listed previous training and indicated the number of years of previous teaching experience.

Table 12 contains the results of these correlations. A significant positive correlation was found between initial Practice subtest scores and both perceived level of preparation and previous training. No correlation was found between the initial LOS,

Table 12

Pearson Correlations for Literacy Orientation Survey Gain Scores, Beliefs Gain Scores, and Practice Gain Scores (n=25)

	Perceived Level of Preparation		Previous Training		Years Teaching Experience	
	r	p	r	p	r	p
Initial LOS Scores	.284	.169	.355	.081	.016	.938
Initial Beliefs Scores	.019	.927	.211	.312	-.201	.336
Initial Practice Scores	.428*	.033	.408*	.043	.288	.162
LOS Gain Scores	-.015	.943	-137	.512	.055	.794
Beliefs Gain Scores	.032	.879	.059	.779	.381	.060
Practice Gain Scores	-.122	.562	-.212	.310	-.265	.200

The initial Beliefs subtest, or any of the gain scores with previous training and perceived level of preparation. There was no correlation of any of the scores with years of teaching experience.

Supplemental Findings

In addition to the analysis of data to address the research questions, the statements teachers wrote to the open response and comments sections were aggregated. Following is a tabulation of the types of statements (practical arguments) the teachers wrote on the pre and post questionnaires.

Teachers' practical arguments. The statements teachers wrote about their beliefs about facilitating reading comprehension were grouped into five practical argument premise categories: empirical, stipulative, situational, and value. The statements that could not be identified as a practical argument were put in a category designated as "not practical arguments." Results in Table 13 were only reported for 22 teachers because three of the teachers did not complete the initial or final or both of the practical arguments assignments.

Paired samples t tests were done to test whether there were differences in the number of initial and final practical arguments. See Table 14. Statistically significant increases were found between the initial and final value premises, stipulative premises, and the sum of the practical argument premises. No significant differences were found for situational and empirical practical arguments. There was a significant decrease in statements that did not contain a practical argument.

Table 13

Practical Arguments Offered by Teachers on Pre and Post Questionnaires

	Initial Practical Argument					Final Practical Argument				
Teacher	No category	Empirical	Stipulative	Situational	Value	No category	Empirical	Stipulative	Situational	Value
1	4	0	0	0	0	0	0	1	1	2
2[a]										
3	1	1	0	1	0	0	0	0	1	2
4	0	3	0	0	0	0	1	0	0	1
5	1	2	0	0	0	0	1	0	1	0
6	2	0	0	0	1	0	1	1	0	2
7	0	2	0	0	1	0	1	0	1	2
8	0	1	0	0	1	0	3	0	0	1
9	0	3	0	0	0	0	0	0	1	1
10	0	2	0	1	0	0	1	0	0	1
11	0	2	0	2	0	0	4	0	0	
12	0	2	1	0	0	0	0	1	0	1
13	0	3	0	1	0	0	0	2	3	0
14[a]										
15	0	4	0	0	1	0	1	0	0	1
16	0	3	0	0	0	0	0	0	2	2
17	0	0	0	0	0	0	0	0	1	3
18	0	3	0	1	0	0	3	2	0	1
19	0	1	0	0	0	0	4	1	0	1
20	2	3	0	0	0	0	1	1	1	0
21	2	2	0	0	0	0	3	0	0	3
22	0	0	0	1	1	0	1	1	0	4
23	0	2	0	0	1	0	0	3	1	0
24	2	0	0	0	1	0	6	1	0	0
25[a]										
Total	14	39	1	7	7	0	31	14	13	28

[a]Teachers # 2, 14, and # 25 did not complete either initial practial argument or final or both.

Teachers' comments. What teachers said in the space for comments could be grouped into two main categories. The first category lists the action/s that they were

Table 14

Means, Standard Deviations, and Paired Samples t Values Comparing Initial and Final Practical Arguments (n=22)

Practical Argument Premise	M	SD	t	p
Initial Empirical	1.65	1.72	-.563	.579
Final Empirical	1.39	1.73		
Initial Stipulative	.04	.21	3.25	.004
Final Stipulative	.60	.84		
Initial Situational	.30	.56	1.30	.208
Final Situational	.56	.79		
Initial Value	.30	.47	3.36	.003
Final Value	1.22	1.13		
Initial Not a Practical Argument	.60	1.07	-2.73	.013
Final Not a Practical Argument	.00	.00		
Initial Sum of Practical Arguments	2.12	1.45	3.36	.003
Final Sum of Practical Arguments	3.72	1.95		

taking or felt should be taken either personally or as a group. The groups identified were grade level teachers, building faculties, content area teachers, reading teachers, and the district teachers. Not only did 19 teachers indicate they were individually taking specific actions, eight teachers identified specific programs strategies they would like to see the various groups implement. Several of the categories of group action point toward

teachers working collaboratively. Comments by teachers are aggregated and categorized in Table 15.

Table 15

Actions Teachers Reported or Suggested

Personal	Group—District, Building, etc.
• I have begun to use interventions and strategies from the modules. (19) (Some listed specific strategies.) • I have some good ideas, but need some help and/or "know how" to implement some of them. (4) • I would like time to discuss strategies with colleagues. (3) • I will implement real-life theme-based strategies. (1) • My HS students will do a project on the importance of reading--a workshop for parents. (1)	• As a staff we should implement reading strategies i.e. KWL, I Charts, Recorded Books, FLIP, QUEST, etc. (8) • We need time together to discuss the strategies and interventions and ways to implement them. (7) • We need in-depth training and should take our charge to help students more seriously. Get specific training. (4) • Need practical help—coaching to help incorporate interventions. (2) • We need to discuss among colleagues how curriculum and practices fit with this new information. (2) • We need an informed cadre of practitioners to help implement. (1) • We should do reading/writing interdisciplinary work. (2) • Study skills should be in reading classes. Use strategies from modules. (1)
Total (28)	Total (27)

The second category included information about the staff development process. Comments in that category were grouped into three sub categories: scheduling, procedure and content. See Table 16. Over one fourth of the teachers suggested such projects should be scheduled earlier in the school year. Four said it was very difficult to schedule the meetings with teachers in other buildings. Administrators had suspected

Table 16

Teachers' Comments Regarding the Staff Development Process

Scheduling	Procedure	Content
• Schedule projects earlier in year. This was too late (7)	• Didn't precisely follow the procedures. (9)	• More variety needed. Articles shouldn't repeat ideas. (3)
• Scheduling dyads across building lines was inconvenient and difficult. A mess. (4)	• Dyads were very restricting and stiff. They were not natural. (4)	• Modules should be better quality. Several copies were difficult to read. (1)
• I liked the flexibility in scheduling the dyad meetings. (4)	• Wanted discussion time with dyad partner. (4)	• Modules should be arranged differently. (But made no recommendation) (1)
• Needed more time to complete the modules. (2)	• Do another project, but allow time to "go deeper." (4)	
• Scheduling was not easy, but the college credit made it worth it. (1)	• Needed more time. 3-minute responses were not adequate. (3)	
• Conflicted with a lot. (1)	• Would prefer to select own partners for dyads (2)	
	• Do dyads with those who work in same bldg. (3)	
	• Would like staff discussion after dyads (1)	
	• I loved the reading and writing. Hated the dyads. (1)	
Total (17)	Total (31)	Total (5)

that would be the case, but knew there had been very little communication and basically

no collaboration among teachers across building lines. There were many comments about the dyad process and the limitations it presented in terms of continued discussion. Again, the issue of meeting with partners from other buildings was raised. There were few comments about the content. It is important to note what is not in the comments. There were three parts to the tasks the teachers did. They read or viewed articles or videos, had the constructivist listening dyad with the partner, and wrote the 250-500 word reflective piece. One teacher said he/she loved the reading and writing, but noted that he/she hated the dyads. No other comments were made specific to the reading/viewing or writing, but teachers had much to say about the dyad process—all but one of the 31 procedure comments related to the dyad process.

CHAPTER V

Discussion

Introduction

The review of literature conducted for this study reflected a common theme: staff development is presently in a state of reinvention to address what research has shown to be effective. The literature clearly shows that traditional staff development must and is changing from the typical style in which someone in authority determines what is needed and someone outside the school delivers a program that teachers are expected to implement. The result is that many schools such as Del Norte are conducting staff development in ways very different from the past. Key to the revised staff development is the involvement of the teacher in ways that reflect not only what is known about how adult learners learn but also the understanding that teachers have beliefs and feelings that strongly influence their practice and participation in the change process. Simply teaching new content has not yielded change in practice. The question of whether the revised forms yield desired results must be answered. More specifically, the question of whether change in teachers' orientation to reading resulted from a staff development project designed to move teachers from a traditional toward a constructivist orientation was to be answered.

The intent of this study was to determine the theoretical orientations to reading of the select population of regular education teachers and to determine whether a staff

development project influenced teachers' orientations to reading. The study consisted of evaluation of data gathered before and upon the completion of a staff development project designed to shift teachers' theoretical orientations to literacy toward a constructivist orientation.

This study focused on a small rural Colorado school district where staff development was conducted in the area of reading; therefore, this chapter presents a discussion about the participants of the study and results of the staff development project.

Characteristics of Participants

The sample reflected the characteristics of the entire staff for the Del Norte Schools. There was a fairly even split between elementary and high school teachers participating in the study. Most (80%) were women. Distribution by years of teaching experience was fairly even among the categories, ranging from first year teachers to those with more than 30 years experience. Similar to this study, Scheaffer (1995), in a comprehensive national study, found the majority of teachers (59 percent) were between the ages of 36 and 55, with 32 percent being 35 years or younger and nine percent being older than 55. Approximately one-third of the teachers (34 percent) had between 6 and 15 years teaching experience, with 27 percent having fewer than 6 years of experience and 39 percent having 16 or more years of experience

Having said that the sample was representative of the entire staff, a question surfaced when reviewing the data from the section of the questionnaire in which teachers were asked to report their perceived level of preparedness to facilitate reading comprehension. The perceived level of preparedness to facilitate reading comprehension, as reported on the initial survey, ranged from no teachers claiming to be unprepared to 32

percent indicating they believed they were very well prepared. Twenty-four percent indicated they were little prepared, with 44% indicating they saw themselves as generally prepared. These percentages were interesting to administrators because many teachers had earlier told the administrators that they didn't believe they and their colleagues had had adequate opportunity to learn the necessary skills and competencies to facilitate reading instruction at levels above second grade. The needs assessment that precipitated the project clearly showed more than 80 percent the teachers considered their skills and competencies in the content area of reading to be inadequate. Possible reasons for the discrepancy are found in comments from the building coordinators and principals:

- Participation was voluntary—participants were self-selected.
- Some upper level teachers did not perceive it to be their job to assist with reading instruction.
- Time was an issue. Although three hours Adams State College credit were awarded at a significantly reduced cost, teachers still had to dedicate a large amount of their own time. Coaches and others with multiple responsibilities did not feel they could add more to their schedules.
- Some teachers didn't need credit to advance on the pay scale. Unfortunately, according to principals, that is the main reason some teachers participate in optional inservice projects.

The data on previous training showed that teachers reported from none to eight previous trainings with a focus on teaching/facilitating reading instruction and comprehension. What constituted previous training should have been more specifically defined in the questionnaire. Discussion with teachers following the project revealed that

there were differences between what teachers identified as "previous training." Some believed that to indicate they had "previous training" they had to have taken a full semester course in their college program. Others counted one-day workshops. The correlations between previous training and results of the initial LOS are discussed further in the section discussing the first research question.

Most of the teachers in this study identified themselves as having the dominant learning style of "Assimilator" with the second highest group being the "Converger" group. Interestingly, the aggregation of data from numerous studies in Kolb's book (1984) on learning styles show both elementary and secondary education teachers generally in the "Accommodator" group. The Del Norte teacher population in the staff development project showed only 12 percent in the "Accommodator" group. This is the only major difference I found when comparing the participants in this study group with teachers in general. Clearly, more study is needed before any conclusions may be drawn. To view the attributes of the learning styles, refer to Figure 1 in Chapter III.

Discussion of Results

A discussion of the results of this study and comparisons with other studies follows. The four research questions frame the discussion.

Research question one. The purpose of the first research question was to determine the theoretical orientations to reading of a group of rural teachers of students in grades 2-12. Because many of the teachers in grades 2-5 had previously been given the opportunity to participate in training on effective reading practice, it was thought that at least some of their scores would fall in the constructivist category on the initial Literacy Orientation Survey (LOS 1). Because teachers of grades 6-12 had had very little

exposure to constructivist theories and practice regarding reading, it was believed their initial Literacy Orientation Survey scores would fall in the traditional or eclectic range, generally reflecting what they had experienced as students learning to read.

Overall on the initial LOS, 16 percent of teachers' scores were in the traditional category, 52 percent fell in the eclectic category and 32 percent in the constructivist category. However, the scores in the constructivist category tended to be just barely in the category, indicating the orientation was not very strong. Further, it did not turn out that elementary teachers scores were more toward the constructivist orientation. The scores were slightly higher, but the difference was not significant.

I did not find it surprising that the orientations to literacy tended to be in the eclectic range on the continuum on the initial survey. The mean for participants in Wham's work was 117 (1996) which lies between the means of the pre and post survey means for all teachers in this study, 114.12 and 118.76 respectively.

Similar results were found for various groups on the Theoretical Orientation to Reading Profile (TORP), which is important because a strong positive correlation exists between results for the LOS and the TORP. Typically, studies utilizing the TORP show a predominant number of teachers adopting the phonics/skills orientation, although the goal of change agents has been to move teachers toward whole language/constructivist orientations. For example, a descriptive study by Feng and Etheridge (1993) found 85 percent of first grade teachers held a skills orientation, while only eight percent held a whole language theoretical orientation to reading. These and other results may indicate, as some researchers believe, that there is a very strong tendency for teachers to teach as they were taught regardless of staff development experiences.

Stansell and Hubert (1978) conducted a study of 207 preservice teachers to discover their theoretical orientations to determine whether there were differences between elementary and secondary program majors. It was found that there was a significant tendency to prefer a skills orientation in each subgroup and in the entire sample. There were no significant differences between the subgroups. Likewise, this study found no significant differences between the elementary and middle/high school teachers orientations to reading. Scores did place both groups generally in the middle (eclectic range) on the continuum from traditional to constructivist as did the results of Stansell and Hubert's study on the continuum from phonics to skills to whole language orientation.

A national study using the TORP (Scheaffer, et al., 1995) showed the vast majority (73.2 percent) of teachers were in the skills orientation according to the TORP scores, with two tenths of a percent in the whole language orientation. A review of the characteristics of the national sample shows it to be similar to the results found in this study except for two areas, the advanced degree and/or endorsement in the field of literacy and the amount of previous training. To determine if additional preparation had influenced their responses, teachers in the national study were asked to indicate if they held a master's degree or an advanced certificate or endorsement in reading. Approximately 73 percent of the teachers who responded had either a master's degree in reading or a reading endorsement or certificate. Most of the teachers (65 percent) indicated that their graduate degree or endorsement program had influenced their classroom practice in literacy teaching. Approximately 72 percent of the teachers reported having had inservice experiences in language arts within the last year.

Contrasting with these data, my data showed half of teachers reported having from none to three previous training in their entire career. The mean for number of previous trainings was only three, with the highest number of eight reported by only two of the teachers. Certainly the teachers in this study had not had as many opportunities for inservice trainings within the past year as was reported by the 72 percent of teachers in the national study, nor did they have the same types of advanced training, which simply were not available in this rural area. There were no participants in this study with graduate degrees in literacy and only two with reading endorsements. That condition probably stems from the fact that approximately 72 percent of San Luis Valley teachers have teaching degrees from Adams State College which, until the past year, offered no advanced degree in the field of reading.

No data are available regarding the literacy orientations of the teachers who did not participate in the staff development project. However, one would speculate that the scores might be lower than the scores of teachers who were interested enough in acquiring more expertise that they devoted their personal time to be involved in the project.

In summary, the vast majority of teachers across the nation (73.2 percent) in Stansell and Hubert's (1973) study were identified as skills oriented in their views of reading instruction. These findings are similar to those of Levande (1989), who conducted a study in five schools within a single representative district and found 72 percent of surveyed teachers were skills oriented and 10 percent whole language. The nation-wide study found only two percent of teachers self-identified as being in the whole language category. Feng and Etheridge (1993) found only slightly over three percent

expressed whole language beliefs. No studies in the United States have found whole language percentages as high as the 16 percent found on British infant school teachers (Miller, 1990). Mean scores for teachers in urban regions were more toward the phonics end of the spectrum when compared to scores of teachers in rural areas. Comparisons among TORP studies using mean scores yielded no significant differences between the results for the national survey and studies done by Hoffman and Kugle (1981), and by Gove (1983). The conclusion is that teachers in the national study have the same orientation as teachers in other studies reporting means and similar orientations to the teachers in this study.

Research question two. To determine whether change could be effected through the staff development project was of utmost importance to know. The format for the staff development was designed to take adult learner's needs into consideration and to be low cost in terms of district dollars and teacher release time. If results showed it an effective process for realizing change, especially in practice, it could be a resource-efficient way for rural schools to improve teaching.

Change in literacy orientation was seen as a result of the staff development project. The percentages of teachers' scores falling in each category on the Literacy Orientation Survey illustrates the shift. The percentage of teachers' scores falling in the traditional category decreased from 16% to 4%. In the eclectic category the percentages were 52% initially compared to 48% on the final LOS. An increase was seen in the constructivist category, 32% to 48%. It should be noted, however, that many of the scores in the constructivist category, especially on the initial LOS, were just barely into

the category, indicating there is still room for strengthening the literacy positions toward the constructivist orientation.

There was a significant increase for the entire group on both the complete Literacy Orientation Survey and the Practices subtest, indicating a change in literacy orientation and in practice. There was not significant change on the Beliefs subtest. That was not expected. I anticipated change in all three areas.

Although it is encouraging to see change in practice scores, it should be noted that the data used were from self-reports of teachers. A follow-up observation of practice is needed to substantiate the reported change in practice. Because Lenski, Wham and Griffey (1998) found the reported changes to be consistently reflected in actual classroom practice, actual change in practice confirmed by observation would be expected.

There is discussion in the literature about whether beliefs must change before changes are made in practice. Several questions surface when this is considered. In this study, significant change in "reported" practice was made, although there was no significant change in beliefs. It could be that the initial beliefs scores started higher and, therefore, did not go up significantly or that practices may be implemented without the underpinnings of the theoretical orientation. In the latter case the question of sustained use of practices arises. Fullan's (1985) work indicates that it is possible to get superficial change that is only sustainable when there is a solid understanding of rationale and principles. The Scheffler et al. (1993) study to investigate the shifts in teachers' theoretical orientations to reading examined the direction, durability and dynamics of affected shifts in teachers' theoretical orientation to reading after a two-day whole-language workshop. They found that that teachers moved away from initial beliefs as to

how reading should be taught and retained this distance but did not move with consistency toward an alternative orientation.

Studies by Richardson and Anders (1994) showed that their three-year practical argument staff development was very effective in making change in teaching practices for most teachers. Others remained unchanged and entrenched in their orientations despite the intensive staff development programs. A difference to be noted is that entire staffs of teachers were involved in the various school staff development projects conducted by Richardson and Anders. Not all teachers chose to participate in the staff development project being studied. In fact, slightly less than half chose to be involved, although three semester hours of college credit was awarded for participation and scholarships to cover all but $25.00 of the tuition were made available to all district teachers.

Hurst (1991) found not only significant gains in teacher agreement with whole language philosophy, but also improved group unity and increased willingness to utilize the methods in the future following voluntary participation in weekly meetings in which teachers were provided with whole language strategies and access to material. The duration of the meetings in the Hurst study was not mentioned, but my assumption was that they were somewhat long-term, a year or a semester.

Bruinsma's (1985) study that replicated an earlier study by Bean, Bishop and Leurer (1982) found significant results, as did Bruinsma, in change in teacher orientation for the group participating when compared to a control group following a 9-day summer workshop. That study, interestingly, also consisted of volunteer participants.

There has been success in facilitating change in teachers' orientation to reading in some groups of teachers. More study is needed before conclusions may be drawn regarding what will work for all teachers. However, one condition that appears to be present in successful programs is that of having volunteer participants.

Research question three. The purpose of the third research question was to determine whether teachers who scored lower on the initial Literacy Orientation Survey would make more gains than teachers who scored higher—toward the constructivist end.

I thought that the low scorers would have more opportunity to change because they started with lower scores. The high scorers started high and would have less to learn from the content. I expected more change for the low scorers. That did not happen. What did happen was that teachers who scored higher on the initial survey (toward the constructivist) gained more than those who initially scored lower. There were significant differences found for the Literacy Orientation Survey gain scores, the Beliefs gain scores and the Practices gain scores. Without more data one can only speculate as to the reasons for this result. Perhaps the low scorers were not as interested in learning new strategies as the teachers who already had some background with which the new information was consistent. The teachers who had a foundation in constructivist practices, those who scored higher initially on the LOS, may have found the information in the modules to be pertinent and immediately useful. Teachers' comments that what they were reading made sense and added to what they were already doing substantiate that idea.

Research question four. To determine whether different groups of teachers made more gains than others, I used statistics to test the variables of gender, perceived level of preparedness, years of teaching experience, assigned teaching level, previous training,

learning style, and comfort level with the constructivist listening dyad process which was used in the project.

I found no significant differences between gain scores for men and women on either the Literacy Orientation Survey or the Beliefs and Practices subtests. I did not locate any study in the literature indicating that a difference was found.

Although positive correlations between both perceived level of preparedness and previous training were found with the initial Practice scores, there was not a significant correlation with gains scores for the Literacy Orientation Survey or Beliefs or Practices subtests. There were not positive correlations between Literacy Orientation Survey scores or Beliefs or Practices initial or gain scores and years of teaching experience. Teaching experience did not appear to impact change. These results contrast with those found in the national study (Scheaffer, et al, 1995) which found that with increasing years of experience teachers tended to move toward the phonics orientation on the Theoretical Orientation to Reading Profile (TORP). Teachers with more experience scored lower on the TORP indicating that as teachers gained experience they tended to be or become more phonics oriented or that they were always more phonics oriented and did not change. Teachers' mean score on the TORP was 71.82. That result is especially interesting because it appears, if teachers become more phonics oriented, to be diametrically opposed to what staff developers are attempting to do. I believe it is more probable that teachers who have taught longer were trained in the phonics methods and have tended to maintain the orientation.

Richards, et al. (1987) found that teachers with more diverse experience and training were more likely to endorse a whole language approach than were teachers with

less experience, who were more likely to endorse a phonics approach. Whether diverse experience made a difference in change of orientation was not found elsewhere in the literature.

Assigned teaching level seemed to have little impact on the results in this study. There were no significant differences between elementary and middle/high school teachers on the Literacy Orientation Survey gain scores nor on the Practices subtest scores. There was, however, a significant difference between elementary and high school teachers' scores, with elementary teachers showing slight gains and middle/high teachers showing slight decreases for the Beliefs subtest. I question, however, the strength of the LOS as an instrument to evaluate the change in beliefs at upper levels. It is an instrument designed to most appropriately evaluate primary and elementary teachers' orientations. The practical arguments, I believe, offer better information about middle and high school teachers' beliefs and practices.

Testing for differences in gains in teachers' scores as compared to learning styles showed no significant differences with one exception. The Practice subtest gains for assimilators went down as compared to the combined "others." Without more study, nothing can be concluded from these results. Just as it would be informative to know the literacy orientations for the entire staff, it would be informative to know the learning styles for the entire staff and how they compare to the identified styles in the study sample. Most (39 percent) of the teachers in the study were "assimilators". Second to the assimilators were the "convergers" at 30 percent.

The two groups defined from their levels of comfort with the constructivist listening dyad process used showed no difference on the Beliefs and Practices subtest

scores gain scores, nor was there significant difference between groups on the total LOS gain scores. Teachers expressed a number of comments about the constructivist listening dyad process in open response sections of the survey. Their discomfort with the constructivist listening dyad process may have led to their not following the procedures as prescribed. Further study is needed to determine whether there would be differences, if the procedures were strictly followed.

Using the constructivist listening dyad process was of interest to me because significant gains in teacher change have been reported by Weissglass (1998) working with the Center for Educational Change in Mathematics to facilitate several National Science Foundation funded state and national reform projects. The Equity in Mathematics Education Leadership Institute project, in particular, is reported to have effected positive change. However, no quantitative data were located to support the claims. Studies by Inverness Research Associates are to provide data on the effects of the various projects.

In the literature the only report of the use of constructivist listening that I was able to locate was for a study outside the field of education. Constructivist listening was used as a component of a program to initiate collaborative research and development among farmers, researchers and advisers to overcome polarized, conflictual communication about sustainable land use. Basically, communication and tolerance for acceptance of alternative ideas were significantly improved.

Supplemental Findings

Because goals of the project were to clarify teachers' beliefs, assist teachers to move toward a constructivist orientation, and take action toward improving reading

instruction for students, additional data were gathered. First, teachers written practical arguments about their beliefs about reading were collected before and after the project. Second, written comments made by teachers were aggregated. A summary and discussion of the results of analysis of the practical arguments and comments with implications and recommendations follow.

Practical arguments. The purpose of eliciting practical arguments, the statements teachers make about what they believe about reading, is to prompt reflection, resulting in clarification and possible reconstruction of those beliefs. When the practical arguments are challenged through the introduction of conflicting information, teachers either defend (maintain) or alter their practical arguments. I wanted to know whether the introduction of research-based strategies combined with teachers' sharing with each other what they knew and believed about teaching would make a difference in the numbers and content of practical arguments made by the participants before and after the staff development project.

The statements teachers wrote about their beliefs about reading were grouped into five categories, empirical, stipulative, situational, value and those that could not be identified as a practical argument. Paired samples t tests were done to test whether there were differences in the initial and final practical arguments. Statistically significant differences were found between the initial and final arguments for value premises, stipulative premises, and the sum of the practical argument premises. These results are important because they show change in two important areas. First, teachers offered more stipulative premises in their final reports--they offered more reasons in explanation or support for their actions. Second, teachers identified and described more instances of the

good or benefit that could come as a result of increased reading comprehension in older students. The extent to which they understood the value of reading apparently was augmented.

Not only did teachers write more in the practical argument section following the project, they wrote no statements that were not practical arguments on the final surveys.

Teachers' comments. Teachers comments were aggregated into two main groups, those about actions they have taken or suggest should be taken and those about the staff development process. The actions they listed were further separated into those that they personally planned or were taking and those that they believed should be taken by groups. The process comments were further separated into scheduling, procedure and content issues.

To summarize the comments about action, of the 25 teachers, 19 reported having begun to use strategies addressed in the modules. Most of the group action comments dealt with suggestions that the group work together in some way to address next steps to be taken. Teachers stated specifically what they recommended be done by the groups. Refer to Table 15. They identified specific strategies to implement by grade level, building or district and expressed the desire for time for collaboration and further training.

Teachers expressed concern with the procedures and scheduling of the staff development. Little was said about the content. Only three teachers said there should have been more variety and that articles should not repeat ideas. More made comments about the procedure. Nine said they didn't follow the procedures—usually indicating their problem was with doing the constructivist listening dyads. Some didn't like the

"stiffness" of taking timed turns, not interrupting and not being allowed to have longer discussion or debate following the dyads. Only one teacher commented about liking the reading journaling, none said they did not like the reading, viewing or writing segments. Seven indicated the project should have been done earlier in the year. Definitely, a recommendation would be to conduct such a project during the fall semester or at least early in the spring semester and allow more time for completion. Scheduling time to meet with teachers across building lines was identified as a problem for four of them. Four others stated they liked the flexibility of scheduling the meetings at times that fit their schedules. One said, "The scheduling was not easy, but the college credit made it worth it."

Although this was the only written comment about the credit, a number of teachers told me at various times during the project that the credit was appreciated and definitely influenced their involvement. Relevant to the scheduling issues is information shared in debriefing meetings with principals following the project. All three principals indicated they'd observed increased interest, sharing and collaboration among their staff members, which was one of the main goals for the district project. The principals appreciated the project making connections among teachers across the building lines. Two had observed dyads being used by teachers in staff meetings. They said some of the barriers to communication among staffs of the three levels appeared to be crumbling a bit as teachers personally became acquainted with each other and shared what they knew and believed regarding reading. Positive comments that teachers made about the interaction with peers were shared by the principals, the essence being an appreciation for time to work collegially. Typically they had observed projection of blame rather than acceptance

of responsibility for action. In conclusion, although it is difficult to find time for teachers to study together across building lines, it proved to be beneficial.

Recommendations for Future Research

Conducting a similar study using a control group composed of teachers from a similar school would be desirable. Training would be done in one school with teachers in the other receiving no training. Results would be more illustrative.

When evaluating the effects of this staff development project, it became evident that the practical arguments were very informative and provided more insight into middle and high school level teachers' beliefs and probable practice than the Literacy Orientation Survey, which is more appropriate for assessing primary and elementary teachers' beliefs and practices. Eliciting practical arguments from teachers of students in upper grades is recommended to yield the most comprehensive information about teachers' literacy beliefs and practices.

Improper use of the dyad process may have reduced the results. Presenting the dyad process, Julian Weissglass stresses the importance of following the guidelines. (See Guidelines for Dyads in the Appendix.) It is revealed in the teachers' self-reports that not all consistently followed the guidelines. The researcher concludes that the process should have been better explained, modeled and practiced before expecting the teams of teachers to use it in the staff development project. Agreement by the teachers to use the process did not result in them consistently doing so. Although most teachers indicated on the follow-up survey that they were comfortable using the dyad process, nine indicated they did not follow the directions precisely in at least part of their staff development sessions.

Because the dyad process used by each team of teachers was not monitored due to the nature of the project, it is believed by the researcher that even wider variance from the guidelines than reported may have taken place. It is also believed that the participants liked the researcher and wanted to appear to have done well. However, the restrictions on conversation that are respected when the dyad process is done correctly as specified in the guidelines (Weissglass 1997) were definitely not as well observed as they should have been, possibly leading to reduced impact of the process. Because the constructivist listening dyad process has reportedly yielded positive results, it would be valuable to know what impact they might have in the staff development process, if they were conducted as directed by Julian Weissglass.

Conclusions

The findings in this study suggest that teachers cannot only take charge of their professional development, but also when they are allowed choice and flexibility within a program of study providing structures to increase understandings, they change.

Teachers' concluding written statements about their literacy beliefs (i.e., practical arguments) showed that teachers better articulated their positions. Their final statements included more reasons in explanation or support of their actions, indicating increased understanding of purpose essential to sustained use of practice. Overall, facilitating this type of collegial study across building lines leads to teachers' enhanced cumulative knowledge base and promotes teacher change.

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Appendix A

Literacy Orientation Survey

Literacy Orientation Survey

The Construction of a Guide for Clarifying Connections Between Beliefs and Practice

AERA SIG:
Basic Research in Reading and Literacy
March 24-28, 1997
Chicago, Illinois

Mary Ann Wham
University of Wisconsin-Whitewater

Susan Davis Lenski
Illinois State University

LITERACY ORIENTATION SURVEY (LOS)

Directions: Read the following statements, and circle the response that indicates your feelings or behaviors regarding literacy and literacy instruction.

1. **The purpose of reading instruction is to teach children to recognize words and to pronounce them correctly.**

   strongly disagree 1----------2----------3----------4----------5 **strongly agree**

2. **When students read text, I ask them questions such as "What does it mean?"**

   strongly disagree 1----------2----------3----------4----------5 **strongly agree**

3. **Reading and writing are unrelated processes.**

   strongly disagree 1----------2----------3----------4----------5 **strongly agree**

4. **When planning instruction, I take into account the needs of children by including activities that meet their social, emotional, physical, and affective needs.**

   strongly disagree 1----------2----------3----------4----------5 **strongly agree**

5. **Students should be treated as individual learners rather than as a group.**

   strongly disagree 1----------2----------3----------4----------5 **strongly agree**

6. **I schedule time every day for self-selected reading and writing experiences.**

never **always**
1----------2----------3----------4----------5

7. **Students should use "fix-up strategies" such as rereading when text meaning is unclear.**

strongly **strongly**
disagree **agree**
1----------2----------3----------4----------5

8. **Teachers should read aloud to students on a daily basis.**

strongly **strongly**
disagree **agree**
1----------2----------3----------4----------5

9. **I encourage my students to monitor their comprehension as they read.**

never **always**
1----------2----------3----------4----------5

10. **I use a variety of prereading strategies with my students.**

never **always**
1----------2----------3----------4----------5

11. **It is not necessary for students to write text on a daily basis.**

strongly **strongly**
disagree **agree**
1----------2----------3----------4----------5

12. **Students should be encouraged to sound out all unknown words.**

strongly **strongly**
disagree **agree**
1----------2----------3----------4----------5

13. **The purpose of reading is to understand print.**

strongly disagree				strongly agree
1	2	3	4	5

14. **I hold parent workshops or send home newsletters with ideas about how parents can help their children with school.**

never				always
1	2	3	4	5

15. **I organize my classroom so that my students have an opportunity to write in at least one subject every day.**

never				always
1	2	3	4	5

16. **I ask the parents of my students to share their time, knowledge, and expertise in my classroom.**

never				always
1	2	3	4	5

17. **Writers in my classroom generally move through the processes of prewriting, drafting, and revising.**

never				always
1	2	3	4	5

18. **In my class, I organize reading, writing, speaking, and listening around key concepts.**

never				always
1	2	3	4	5

19. Reading instruction should always be delivered to the whole class at the same time.

strongly disagree				strongly agree
1	2	3	4	5

20. I teach using themes or integrated units.

never				always
1	2	3	4	5

21. Grouping for reading instruction should always be based on ability.

strongly disagree				strongly agree
1	2	3	4	5

22. Subjects should be integrated across the curriculum.

strongly disagree				strongly agree
1	2	3	4	5

23. I use a variety of grouping patterns to teach reading such as skill groups, interest groups, whole group and individual instruction.

never				always
1	2	3	4	5

24. Students need to write for a variety of purposes.

strongly disagree				strongly agree
1	2	3	4	5

25. I take advantage of opportunities to learn about teaching by attending professional conferences and/or graduate classes and by reading professional journals.

never **always**
1----------2----------3----------4----------5

26. Parents attitudes toward literacy affect my students' progress.

strongly **strongly**
disagree **agree**
1----------2----------3----------4----------5

27. The major purpose of reading assessment is to determine a student's placement in the basal reader.

strongly **strongly**
disagree **agree**
1----------2----------3----------4----------5

28. I assess my students' reading progress primarily by teacher-made and/or book tests.

never **always**
1----------2----------3----------4----------5

29. Parental reading habits in the home affect their children's attitudes toward reading.

strongly **strongly**
disagree **agree**
1----------2----------3----------4----------5

30. At the end of each day, I reflect on the effectiveness of my instructional decisions.

strongly **strongly**
disagree **agree**
1----------2----------3----------4----------5

Appendix B

Literacy Orientation Survey

Scoring Sheet

Literacy Orientation Survey (LOS) Scoring Sheet

Directions: Place the number of the answer in the space provided. Recode answers for items with an (*).

Beliefs	Practices
*1. _____	2. _____
*3. _____	4. _____
5. _____	6. _____
7. _____	9. _____
8. _____	10. _____
*11. _____	14. _____
*12. _____	15. _____
13. _____	16. _____
*19. _____	17. _____
*21. _____	18. _____
22. _____	20. _____
24. _____	23. _____
26. _____	25. _____
*27. _____	*28. _____
29. _____	30. _____

Beliefs score:_____ Practices score _____

Total Score:_____

*Recoding Scale 1 = 5 2 = 4 3 = 3 4 = 2 5 = 1

Interpretation of Total Score

---

90 95 100 105 110 115 120 125 130 135 140 145

Traditional Eclectic Constructivist

Appendix C

Change in Literacy Orientation Survey Total and Subtest Scores

CHANGE IN LITERACY ORIENTATION SURVEY TOTAL AND SUBTEST SCORES

Teacher Number	LOS 1 Score	Class	LOS 2 Score	Class	Change	Beliefs 1 Score	Beliefs 2 Score	Change	Practice 1 Score	Practice 2 Score	Change
1	108.00	Eclectic	110.00	Eclectic	+2	59.00	59.00	0	49.00	51.00	+2
2	106.00	Eclectic	108.00	Eclectic	+2	61.00	61.00	0	45.00	47.00	+2
3	120.00	Constructivist	111.00	Eclectic	-9	65.00	59.00	-6	55.00	52.00	-3
4	112.00	Eclectic	131.00	Constructivist	+19	62.00	63.00	+1	50.00	68.00	+19
5	119.00	Eclectic	108.00	Eclectic	-11	67.00	60.00	-7	52.00	48.00	-4
6	97.00	Traditional	113.00	Eclectic	+16	59.00	67.00	+8	38.00	46.00	+8
7	120.00	Constructivist	114.00	Eclectic	-6	65.00	58.00	-7	55.00	56.00	+1
8	129.00	Constructivist	131.00	Constructivist	+2	65.00	73.00	+8	64.00	58.00	-6
9	115.00	Eclectic	120.00	Constructivist	+5	62.00	60.00	-2	53.00	60.00	+7
10	117.00	Eclectic	121.00	Constructivist	+4	62.00	65.00	+3	55.00	56.00	+1
11	108.00	Eclectic	113.00	Eclectic	+5	56.00	60.00	+4	52.00	61.00	+9
12	125.00	Constructivist	131.00	Constructivist	+6	67.00	70.00	+3	58.00	61.00	+3
13	127.00	Constructivist	130.00	Constructivist	+3	76.00	69.00	-7	51.00	61.00	+10
14	116.00	Eclectic	128.00	Constructivist	+12	64.00	69.00	+5	52.00	59.00	+7
15	116.00	Eclectic	114.00	Eclectic	-2	58.00	61.00	+3	58.00	53.00	-5
16	99.50	Traditional	127.00	Constructivist	+27.5	66.00	59.00	-7	56.00	66.00	+10
17	120.50	Constructivist	120.00	Constructivist	-.5	64.50	64.00	-.5	56.00	56.00	0
18	115.00	Eclectic	111.00	Eclectic	-4	62.00	52.00	-10	43.00	59.00	+16
19	99.50	Traditional	97.00	Traditional	+1.5	55.00	50.00	-5	44.50	47.00	+2.5
20	105.00	Eclectic	111.00	Eclectic	-4	62.00	59.00	-3	43.00	52.00	+9
21	115.00	Eclectic	118.00	Eclectic	+3	61.00	60.50	-.5	54.00	57.50	+3.5
22	123.00	Constructivist	123.00	Constructivist	0	64.00	60.00	-4	59.00	63.00	+4
23	119.50	Eclectic	126.00	Constructivist	+6.5	66.00	70.00	+4	56.50	56.00	-.5
24	123.00	Constructivist	139.00	Constructivist	+16	61.00	70.00	+9	62.00	69.00	+7
25	98.00	Traditional	114.00	Eclectic	+16	62.00	64.00	+2	36.00	60.00	+24

Total LOS Score Range: Traditional 0 – 99.5 Eclectic 99.6 – 119.5 Constructivist 119.6 – 145

Appendix D

Demographic Questionnaire

Part 1

Staff Development Reading Project
Questionnaire Part 1

Do not put your name on this questionnaire. Thank you for responding to the following:

1. Are you. . . . .male____ female ____?

2. Indicate your teaching assignment:

   _____Elementary, Grades 2-5
   _____Middle School
   _____High School

3. How well prepared do you feel you are to help older students (grade 3-12) improve in reading comprehension?

   Very well prepared___generally prepared___little prepared ___ not prepared___

4. How many years have you taught?

   More than 20_____ 15-20 _____ 10-14_____ 5-9 Less than 5_____

Please write a paragraph or two to complete the following:
(Please use the other side, if needed.)
When I think about improving students' reading comprehension, I believe

because

Appendix E

Demographic Questionnaire

Part 2

Staff Development Reading Project
Questionnaire Part 2

1. Please list and describe the types of previous training or education you have had regarding teaching reading.

2. I completed the reading/viewing, timed dyad and journal writing exactly as the directions specified with (___all three) (___two) (___one) (___none) of my partners. I complete the process with the following modifications:

3. My level of comfort doing the process as described was
   (___It was great!) (___very comfortable) (___OK)
   (___somewhat uncomfortable) (___I didn't care for it at all!)

4. When you reflect on this project, what ideas, possible "next steps" or suggestions come to mind? How could the project have served you better? Comments:

5. I (___would) (___would not) have interest in researching another topic in this manner.

6. Please write a paragraph or two to complete the following:
   (Use the other side, if needed.)

When I think about improving students' reading comprehension, I believe

because

Appendix F

Module Components

COMPONENTS FOR MODULES FOR READING RESEARCH PROJECT

Module # 1:

Component a. Knapp, M.S. & Turnbull, B. J. (1990) Better Schooling for the Children of Poverty: Alternatives to Conventional Wisdom, U.S. Department of Education, SIR International Menlo Park, CA and Policy Studies Associates Washington, DC Contract No. LC88054001 (Selected pages: 1-12, 17-25)

Component b. Caverly, D. C., Mandeville, T. F., & Nicholson, S. A. (1995). PLAN: A study–reading strategy for informational text, Journal of Adolescent & Adult Literacy, 39, 190-195.

Component c. Garcia, G. E. & Pearson, P. D. (1990) Modifying reading instruction to maximize its effectiveness for disadvantaged students, Center for the Study of Reading, University of Illinois. (ERIC Document Reproduction Service No. ED 314 723).

Module #2:

Component a. Wittrock, M.C. (1996) Generative Reading Comprehension, Elementary School Journal, 92, 169-184.

Component b. Randall, Sally N. (1996). Information Charts: A strategy for organizing student research. Journal of Adolescent & Adult Literacy, 39, 536-542.

Module #3:

Component a. 1992 National Reading Study (1992). Theory of Reading Practice. 1-13.

Component b. Paul, Terrance D. (1996). Patterns of Reading Practice. The Institute For Academic Excellence, Inc., 2-25.

Component c. Bender, William N. and Lauterbach, Susan L. (1995). Cognitive Strategy Instruction for Reading Comprehension: A Success for High School Freshmen. The High School Journal, 79, 58-63.

Module #4:

Component a. Alao, S., Guthrie, J.T. & Rinehart, J. M. (1997). Engagement in reading for young adolescents. Journal of Adolescent & Adult Literacy, 40, 438-446.

Component b. Guthrie, J. T., et al. (1996). Growth of Literacy Engagement: Changes in motivations and strategies during concept-oriented reading instruction. Reading Research Quarterly,31. 306-332.

Component c. Guthrie, J. T. (1996). Educational Contexts for Engagement in Literacy. The Reading Teacher, 49. 432-445.

Module #5:

Component a: Carbo, Marie (1987). Deprogramming Reading Failure: Giving Unequal Learners An Equal Chance. Phi Delta Kappan, 69, 197-202.

Component b. Carbo, Marie (1987). Ten Myths about Teaching Reading. Teaching K-8, 27, 43-45.

Module #6:

Component a. Carbo, M. (1990). Igniting the Literacy Revolution through Reading Styles. Educational Leadership,48, 26-29.

Component b. Carbo, M. (1984). You Can Identify Reading Styles and then Design a Super Reading Program. Early Years, April, 80-83.

Component c. Carbo, M. (1994). Program 2 – Identifying Reading Styles and Effective Teaching Strategies. Breaking the Cycle of Failure, 14-34.

Module #7:

Component a. Carbo, M. (1992). Eliminating the Need for Dumbed-Down Textbooks. Educational Horizons, 70, 189-193.

Component b. Carbo, M. (1984). Recorded Books = Remarkable Reading Gains. Early Years: K-8, 45-47.

Component c. Carbo, M. (1984). How to Start your Own Super Reading Styles Program. Early Years: K-8, 53-56.

Component d. Carbo, M. (1994). Program 3 – Starting a Reading Styles Program. Breaking the Cycle of Failure, 35-42.

Module #8:

Component a. Ogle, D. M. (1986). K-W-L: A Teaching Model that Develops Active Reading of Expository Text. The Reading Teacher, 2, 564-570.

Module #9:

Component a. Smith, F. (1992). Learning to Read: The Never-Ending Debate. Phi Delta Kappan, 73, 432-441.

Component b. Dixon, John (1987). Becoming a Maturer Reader. The Reading Teacher, 40, 761-765.

Component c. Anders, P. L. and Pritchard, T. G. (1993). Integrated Language Curriculum and Instruction for the Middle Grades. The Elementary School Journal, 93, 612-624.

Module #10:

Component a. Oldfather, P. (1995). Commentary: What's Needed to Maintain and Extend Motivation for Literacy in the Middle Grades. Journal of Reading, 38, 420-422.

Module #11:

Component a. Metsala, J. L. (1995). Children's Motivations for Reading. National Reading Research Center, 360-363.

Component b. Quiocho, A. (1997). The quest to comprehend expository text: Applied classroom research. Journal of Adolescent & Adult Literacy, 40, 450-455.

Module #12:

Component a. Groller, K., Kender, J., Honeyman, D. (1991). Does instruction on metacognitive strategies help High School Students use advance organizers? Journal of Reading, 34, 470-475.

Component b. Carbo, M. (1994). A Discussion Guide for Breaking the Cycle of Failure. National Educational Service, 1-42.

Appendix G

Guidelines for Constructivist Listening Dyads

CONSTRUCTIVIST LISTENING

In Dyads we practice Constructivist Listening to:

- encourage the talker to reflect on the meaning of events and ideas
- express and work through feelings that are interfering with clearer thinking
- make decisions
- construct new meanings
- foster educator collegiality
- reduce stress

Guidelines for the Dyads

- Each person is given equal time to talk.
- The listener does not interpret, paraphrase, analyze, give advice, or break in with a personal story.
- Confidentiality is maintained.
- The talker is not to criticize or complain about the listener or mutual acquaintances in his or her turn.

Center for Educational Change in Mathematics and Science, University of California, Santa Barbara

Appendix G

Codebook for SPSS Data Analysis

CODEBOOK

Data Set in SPSS Data Editor
Professional Development Reading Research Project

Name	Variable Labels	Scale	Pos
ID	IDENTIFICATION NO. 1-24	Nominal	1
GEN	GENDER Value Label 1 female 2 male	Nominal	2
TLVL	TEACHING LEVEL Value Label 1 elementary 2 middle level 3 high school	Interval	3
LVLP	LEVEL OF PERCEIVED PREPAREDNESS TO TEACH READING COMPREHENSION Value Label 1 not prepared 2 little prepared 3 generally prepared 4 very well prepared	Interval	4
YRS	YEARS TEACHING EXPERIENCE Value Label 1 Less than 5 years 2 5-9 years 3 10-14 years 4 15-20 years 5 More than 20 years	Interval	5

LSI	LEARNING STYLE INVENTORY (Interval within sub categories. See CE, RO, AC, and AE.)	Nominal	6
	Value Label 1 Accommodator 2 Diverger 3 Converger 4 Assimilator		
DYAD	COMFORT LEVEL WITH CONSTRUCTIVIST LISTENING DYAD PROCESS	Interval	7
	Value Label 1 I didn't care for it at all! 2 It was somewhat uncomfortable 3 OK 4 It was very comfortable 5 It was great!		
PTR	PREVIOUS TRAINING	Interval	8
	Value Label Number of trainings was listed.		
LOS1	LITERACY ORIENTATION SURVEY (PRE)	Interval	9
	Value Label Range from 1-145 Traditional 0-99 Eclectic 100-119 Constructivist 120-145		
BEL1	BELIEFS SCORE (PRE) Range of 1-75 Low to high	Interval	10
PRA1	PRACTICES SCORE (PRE) Range of 1-75 Low to high	Interval	11
LOS2	LITERACY ORIENTATION SURVEY (POST)	Interval	12
	Value Label Range from 1-145 Traditional Eclectic Constructivist		
BEL2	BELIEFS SCORE (POST) Range of 1-75, Low to high	Interval	13

PRA2	PRACTICES SCORE (POST) Range of 1-75, Low to high	Interval	14
CE	LEARNING STYLE INVENTORY Concrete Experience Score "feeling" Range 0-46	Interval	15
RO	LEARNING STYLE INVENTORY Reflective Observation Score "watching" Range 0-46	Interval	16
AC	LEARNING STYLE INVENTORY Range 0-46	Interval	17
AE	LEARNING STYLE INVENTORY Active Experimentation Score "doing" Range 0-46	Interval	18
LOSGAIN	Gain scores for LOS (LOS2-LOS1)	Interval	19
BELGAIN	Gain scores for Beliefs	Interval	20
PRAGAIN	Gain scores for Practice	Interval	21
BEL2HL	Recoded for high/low scorers (Median)	Interval	22
PRA2HL	Recoded for high and low scorers	Interval	23
LOS2HL	Recoded for high and low scorers	Interval	24
IPAN	Initial practical argument with no identifiable premise	Interval	25
IPAE	Initial practical argument with empirical premise	Interval	26
IPAST	Initial practical argument with stipulative premise	Interval	27
IPAS	Initial practical argument with situational premise	Interval	28
IPAV	Initial practical argument with value premise	Interval	29
FPAN	Final practical argument with no identifiable premise	Interval	30
FPAE	Final practical argument with empirical premise	Interval	31
FPAST	Final practical argument with stipulative premise	Interval	32

FPAS	Final practical argument with situational premise	Interval	33
FPAV	Final practical argument with value premise	Interval	34
DYADREV	Dyads recoded 1,2,3 into 1. 4 and 5 into 2		35

Value Label
1 from didn't care for it at all to OK.
2 from very comfortable to it was great!

TLVLRE	Teaching Level Recoded		36

Value Label
1 Elementary
2 Middle/High School

LSIRE	Learning Style Inventory Recoded		37

Value Label
1 Assimilators
2 Others combined

IPASUM	Initial Practical Arguments (Sum)	Interval	38
FPASUM	Final Practical Arguments (Sum)	Interval	39
LOS1CAT	LITERACY ORIENTATION SURVEY SCORES		40

First Survey
1 29-99.5 Traditional Orientation
2 99.6-119.5 Eclectic Orientation
3 119.6-145 Constructivist

LOS2CAT	LITERACY ORIENTATION SURVEY SCORES		41

Second Survey
1 29-99.5 Traditional Orientation
2 99.6-119.6 Eclectic Orientation
3 119.6-145 Constructivist