TEACHERS’ PERCEPTIONS OF THE IMPACT OF ACTION RESEARCH ON
METACOGNITIVE DEVELOPMENT

by

CATHERINE LANGILLE WILSON

(Under the Direction of Jo Blase)

ABSTRACT

The purpose of this study was to identify teachers’ perceptions of the impact of action research on metacognitive development. This study was guided by the methodological research design of grounded theory and the theoretical framework of symbolic interactionism. Data were collected from face-to-face interviews with elementary school teachers who had participated in an on-site action research professional development course. Constant comparative analysis was used to generate a conceptual framework explaining teachers’ perceptions of the impact of action research on their metacognitive development.

Findings from this study demonstrated that teachers do perceive an increase in their metacognition while participating in action research. The study demonstrated that metacognitive growth occurred in situations which were conducive to adult learning, experiential learning, and reflection. Subsequently, teachers demonstrated increased self-verbalizations regarding self-regulation of their teaching practices. Teachers also experienced effects of increased empowerment and confidence regarding their abilities to act on their ideas and confidence to influence their teaching performance.
Several conceptual ideas are discussed based on the findings. The first conceptual idea is that the processes involved in action research promote metacognitive growth. The second conceptual idea from the data is that conducting action research encourages corresponding self-verbalization of self-regulation regarding teaching practices. The third is that self-verbalization of self-regulation promotes teachers’ feelings of empowerment. Such empowerment increases teachers’ confidence to act on their ideas and confidence to influence their teaching performance.

Implications for further research are discussed, along with implications for principals, higher education, professional learning, teachers, and policy makers. Principals, as instructional leaders, should promote action research and teacher metacognition as a means of fostering instructional improvement within their schools. Higher education, professional learning, and policy makers have a role in supporting in-service teachers’ conduction of action research.

INDEX WORDS: Metacognition, Metateaching, Action research, Adult learning, Experiential learning, Instructional Leadership, Reflection, Self-regulation, Self-verbalization, Teacher empowerment, Professional learning, Teacher improvement, School improvement
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B.A., University of Alabama in Huntsville, 1994
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A Dissertation Submitted to the Graduate Faculty of The University of Georgia in Partial 
Fulfillment of the Requirements for the Degree

DOCTOR OF EDUCATION

ATHENS, GEORGIA

2007
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December 2007
DEDICATION

To Walker and Elizabeth: During the time I have been working toward this degree, I have also been enjoying many of your first milestones. I look forward to seeing your interests evolve as you grow, and I am eager to see you reach for your dreams. May you use your talents to pursue your passions throughout your lives!
ACKNOWLEDGEMENTS

There are several people who have been directly influential in my pursuit of my doctorate, and there have also been others who have been indirectly influential. I couldn’t have achieved this goal without these either of these groups of people, and I will always be grateful for their support.

Certainly, the professors on my committee have been directly influential:

Dr. Jo Blase: You have been such a tremendous support to me throughout this process. I am honored that you encouraged me to pursue this degree under your guidance. I have appreciated your insights tremendously, and I have enjoyed each new step along this process with you. Thank you for your enthusiasm and encouragement throughout!

Dr. Joe Blase: Thank you for your time reviewing my work and providing suggestions while serving on my committee. I have also enjoyed being a student in your classes and have enjoyed your expertise and enthusiasm.

Dr. Kenneth Tanner: Thank you also for your time serving on my committee and providing guidance. I have enjoyed your insights and learning more about your area of expertise.

There are also individuals outside the university community who have also been supportive of me, and their encouragement of my work has also been vital to my success:

To Stephen: Thank you for all of your help in so many ways while I was working on this. You have supported me by both your interest in my goals and your confidence in me. All the way down to your computer help and proof-reading assistance, you were always there with a
warm smile and happy to help. I am forever grateful and I love you.

To Dad: My early days following you around the physics lab at Georgia Tech and watching you teach when you were a graduate student made quite an impression! Thank you for encouraging me to pursue my doctorate.

To Mere: Your encouragement of my academic and professional pursuits has fostered my desire to continue on. Thank you for always being there for me over the years. You certainly provided a firm foundation on which I was able to stand!
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CHAPTER 1

INTRODUCTION

Improving Student Achievement

Recent reports compiled by the National Assessment of Educational Progress (NAEP) cite startling statistics regarding the current state of student achievement in the United States. According to their 2005 report, only 30% of the nation’s children are reading at the proficiency level, and less than 70% of the nation’s students graduate from high school on time. Results of the Nation’s Report Card, as compiled by the National Center for Educational Statistics (NCES), show that during the 2005 school year, 36% of fourth-grade students were proficient in mathematics, and only 30% were proficient in reading. Science scores showed that only 28% had met the criteria for proficiency and only 27% had achieved proficient levels in writing. The reports for eighth-grade students were similarly disconcerting, as only 30% were proficient in mathematics, reading, science, and writing (NCES, 2005).

In an effort to address the need for improving student achievement, many educational reform efforts have been put into place across the nation (Hurst, Tan, Meek, & Sellars, 2003). Many of these reform efforts are national, but the responsibility of meeting the challenges of the reform movements is placed upon each state, school district, and individual school. States and school districts are responsible for creating guidelines for acceptable progress, and each school is responsible for documenting and reporting levels of progress each year (NCES, 2005).

National reform movements have shifted their focus over the last decade from primarily encouraging expenditures on certain educational programs to that of holding states accountable
for student performance (Hurst, Tan, Meek, & Sellers, 2003). These standards-based accountability systems monitor what students know and are able to do as a result of attending school. Within such accountability systems, data about students and schools are collected, evaluated, and used to hold educators and others responsible for results (Goertz & Duffy, 2001). In particular, educational leaders are held accountable for student achievement (Pajak, 1993; Schmoker, 2000). To comply with the requirements, they must document measured and sustainable growth in their schools (Elmore, Abelmann, & Fuhrman, 1996). As a result, the schools are being accountable to the students, the parents, and the communities that they serve (Schmoker, 2000).

Instructional leaders must facilitate the activities and programs in schools that are necessary for successful instructional improvement (Blase & Blase, 2003; Glanz, 2005; Glickman, Gordon, & Gordon-Ross, 2000). Such activities include empowering teachers, encouraging meaningful and informed teamwork, assisting in establishing clear and measurable goals, and facilitating regular collection and analysis of performance data (Blase & Blase, 2000; Calhoun, 2002; Corey, 1953; Zepeda, 2003). Efforts to establish goals, monitor them, and adjust actions are necessary components of effective school reform and accountability efforts (Schmoker, 2000). Such instructional improvements ultimately affect childrens’ learning and outcomes (Bishop, 1995). As Carl Glickman (1993) noted, “the litmus test for a good school is not its innovations but rather the solid, purposeful, enduring results it tries to obtain for its students” (p. 50).

In this effort to improve student achievement at the school level, instructional leaders must also provide and encourage teachers to pursue professional development opportunities, which have been shown by research to have a positive impact on teacher development (Blase &
Blase, 2003; Sergiovanni & Starratt, 1998). As classroom teachers have the single most important impact on student achievement (Brophy & Good, 1976), they need to be results focused and data driven (Wiggins, 1994). As teachers collect and review data regarding student achievement, they are critically examining their teaching practices. When they reflect and modify their performance based upon that data, they are engaging in learning (Schmoker, 2000).

Instructional development is essential to building a school atmosphere that promotes a “community of learners,” as described by Glover (1995). He expands on the ideals of this community when he reflects on comments of Barth and Rosenholtz (Glover, 1995):

Barth…like Susan Rosenholz presents a model of effectiveness which looks at school, not as a place, “for important people who do not need to learn and unimportant people who do,” but as a place where students discover, and adults rediscover, the joys, the difficulties, and the satisfactions of learning. This is a model of school effectiveness dependent on the creation of a community of learners or in Rosenholtz’s terms, the building of learning as opposed to learning impoverished environments. (p. 8)

As teachers have a key role in increasing school effectiveness, a critical role of instructional leaders is to increase teacher understanding and use of effective instructional strategies and to facilitate teachers’ abilities to regulate their own use of instructional strategies (Glanz, 2005). Instructional leaders should encourage teacher awareness of effective teaching strategies and self-regulation, based on current research that indicates how adults learn most effectively (Brookfield, 1986; Knowles, 1984; Mezirow, 1990).
Literature Review

**Metacognition**

While variations exist in the definition of metacognition, it is often recognized as an individual’s ability to “reflect upon, understand, and control one’s learning” (Schraw & Dennison, 1994). Current research that indicates how adults learn most effectively is primarily rooted in metacognition and includes adult learning theory, experiential learning, and reflection (Hartman, 2001; Johnson & Johnson, 1999; Manning & Payne, 1996; Marsick & Watkins, 1990; Osterman, 1990; Schon, 1983; Smylie, 1995).

Metacognition is critically important to practicing teachers, for it allows teachers to monitor their instructional strategies within the classroom (Hartman, 2001). Metacognition can help teachers be aware of thinking strategies which yielded positive results regarding instructional practices, thus helping to ensure the continuation of such thinking strategies in the future. Many studies have demonstrated a link between cognitive self-monitoring and self-regulation activities involved in metacognition and the important role that such thinking strategies play in teacher development (Hartman, 2001).

The use of metacognition takes teachers from simply remembering or elaborating on their teaching practice to being active and effective decision makers regarding their methods of instruction. Teachers have increased their abilities to monitor their teaching from simply knowing what-to-do to knowing how-and-when to do it. (Marchant, 2001). Metacognition can help teachers select the best methods of teaching for the many situations that arise, and it can help them to plan the most effective lessons for their students (Hartman, 2001).
**Action Research**

In addition to encouraging teachers to monitor and self-regulate their teaching strategies within the classroom, instructional leaders should support data collection strategies to document the success of current instructional programs and strategies within the classroom (Glanz, 2005; Schmoker, 2000). Having clear goals and methods to assess progress toward the goals increases confidence and a sense of certainty, allowing teachers to embrace the connection between effort and accomplishment (Rosenholtz, 1991; Schmoker, 2000). Such a balanced focus on process and results is fundamental to school improvement (Schmoker, 2000).

Action research, through which teachers look critically at the effectiveness of current classroom practices, is one such data collection strategy that has been found to produce positive results (Mills, 2000). Elliot (1991) explains that action research aims to feed practical judgment in concrete situations, and the validity of the “theories” or hypotheses it generates depends not so much on “scientific tests of truth,” as on their usefulness in helping people act more intelligently and skillfully. In action research, theories are not validated independently and then applied to practice. They are validated through practice. (p. 69)

**Statement of Problem**

While research has documented many positive effects regarding teachers’ use of action research (Calhoun, 2002; Mayer, 1994; McNiff, 2002; Seider & Lemma, 2004), and many educational leaders in recent years have begun encouraging the practice of action research, the field of instructional supervision has not embraced action research as a method of fostering
instructional improvement (Glanz, 2005). Glanz (2005) emphasized, “action research as instructional improvement should be facilitated and encouraged” (p. 17).

Action research and metacognition share components that are conducive to reflective thinking, adult learning, and experiential learning (Glanz, 1998; Hartman, 2001; McNiff, 2002; Mills, 2000; Schon, 1983). However, a link had not been made between action research and metacognition in the literature. As this study now demonstrates a link between action research and metacognition, instructional leaders are now provided with a further incentive to promote action research as a key component of instructional supervision and professional development (see Appendix A).

Additionally, the field of educational supervision is positioned to appreciate and respond to a further connection between the benefits of action research and teachers’ metacognitive growth, for collaborative and reflective practices that are aimed at improving instruction are a current focus in the field of educational supervision (Glanz, 2005). Support from instructional leaders is fundamental to the success of educational reform efforts. Such success cannot be placed on teacher training alone but must include administrative support for teacher growth (Blase & Blase, 2003).

Purpose of Study

The purpose of this study was to identify teachers’ perceptions of the impact of action research on metacognitive development. This study examined the relationship between teachers’ implementation of action research and their perceptions of metacognitive awareness and growth regarding instructional practices. The initial guiding research questions were open-ended and typical of grounded theory research.
Research Questions

1. What are teachers’ perceptions of their metacognitive development during and after action research?

2. What impact did conducting action research have on later self-regulation of teaching performance independent of the action research?

Theoretical/Conceptual Framework

The theoretical framework that guided the collection, analysis, and interpretation of the data in this study was grounded theory, which is “not just findings, but is rather an integrated set of conceptual hypotheses . . . It is just probability statements about the relationships between concepts” (Glaser, 1998, p. 3). This method examines the underlying processes of observed reality and reveals the nature of the processes being studied. Grounded theory “has its own constant verification through modifying by constant comparison. Grounded theory is the theory of what is there and emerges” (Glaser, 1998, p. 4). One basic tenet that interests many proponents of grounded theory is that “all is data.” Researchers who use this method are constantly looking at the data and formulating hypothesis based upon realities to figure out what they are doing and what is going on around them (Glaser, 1998).

Grounded theory is conducive to the examination of social or social- psychological processes. The management and analysis of data is fundamental to the success of this method. Through coding procedures and constant comparative analysis, researchers develop an abstract theoretical framework to explain the data. It is the “integration of categories into a theoretical framework that specifies causes, conditions, and consequences of the studied process” (Charmez, 2002, p. 677).
Definitions of Terms

The following terms are defined according to the purpose of this study:

**Action Research:** Action research is a systematic inquiry conducted by teacher researchers to gather information about how they teach and how students learn (Mills, 2000). Teachers generate their own knowledge by identifying an area of interest and gathering data regarding the area of focus. Teachers then proceed into phases of action based on the gathered data and further study the action through careful analysis (Seider & Lemma, 2004).

**Instructional Leadership:** Instructional Leadership is school leadership in which “administrators and teachers work together as a ‘community of learners’ engaged in professional and moral service (even noble) to students” (Blase & Blase, 1998, p. 4). School leadership of this type includes coaching, reflection, collegial investigation, and problem solving (Blase & Blase, 2003). Promoting the professional development of teachers is a highly influential instructional leadership behavior (Sheppard, 1996).

**Instructional Supervision:** Instructional supervision is a subset of instructional leadership that encourages the professional growth of teachers through tasks such as staff development and action research. Such tasks unite both the needs of the teachers and the goals of the school (Glickman, 1985).

**Metacognition:** Metacognition refers to one’s ability to reflect upon, understand, and control one’s learning (Schraw & Dennison, 1994). The metacognitive components of self-awareness, self-monitoring, and self-regulation are key to effective learning development (Brown, 1987).
Teacher Development: Improvement in decision making about students, learning content, and teaching. These improvements, in turn, refine instruction (Glickman, Gordon, & Ross-Gordon, 2000).

Conceptual Significance

The results of this study contribute to the knowledge of teacher metacognition, self-regulation, and action research. As a connection now exists between action research and metacognition, the latter of which has already been demonstrated as being important to teacher effectiveness in increasing student achievement (Hartman, 2001; Manning & Payne, 1996; Timpson, 1999), instructional leaders have an additional impetus to encourage action research as an instrument for instructional improvement. Instructional leaders have an added incentive to support such staff development activities that increase student achievement, for many reform movements are focusing on increasing student performance (Hurst, Tan, Meek, & Sellers, 2003).

This study also demonstrated the important effects of teachers’ increases in self-verbalization regarding their self-regulation of teaching. Such self-verbalizations emanated from their conducting of action research, and the teachers noted feelings of empowerment which correspondingly increased their confidence to act on their ideas and influence their teaching performance independent of their original action research projects. Not only do teachers experience metacognitive growth while they are conducting action research, but the resulting increases in their self-verbalizations regarding their self-regulation extend beyond the initial action research activities to influence their empowerment, confidence, and teaching performance.

Organization of the Study

The description of this study is divided into five chapters. Chapter 1 introduces the study and describes the organization of the study. Chapter 2 includes a review of the literature on
action research and metacognition, and demonstrates the links which the two share in the literature with adult learning theory, experiential learning, and reflection. Chapter 3 covers the methodology of the study and the corresponding data collection and analysis procedures. Chapter 4 presents the findings of the study, and Chapter 5 includes the discussion of the findings and their relation to the literature. Chapter 5 also discusses implications of the study findings for further research and for educational leaders, teachers, higher education, and professional development.
CHAPTER 2
LITERATURE REVIEW

Introduction

The main bodies of literature that will be reviewed in this section include studies on action research, metacognition, adult learning theories, experiential learning, and reflection. The review of action research demonstrates the many ways in which action research is beneficial the development of effective teaching strategies. Metacognition is being reviewed to explore the importance of metacognitive growth for the development of effective teaching. Information on adult learning theories, experiential learning, and reflection is being reviewed to demonstrate how such actions and knowledge are the foundation of teacher growth and development, and the ways in which they are components of both metacognitive growth and action research. Ultimately, a relationship between metacognitive growth and action research is discussed, particularly their shared importance to adult learning theory, experiential learning, and reflection.

Action Research

Action research has been shown to increase effective teaching and has produced corresponding gains in student achievement (Feeley, 1986; Sagor, 2000; Simmons, 1984). Research has demonstrated that the activities in which teachers are engaged during action research encourage adult learning, experiential learning, and reflection (Glanz, 1998; McNiff, 2002; Mills, 2000; Schon, 1983). Likewise, research has demonstrated that the types of activities that are conducive to metacognitive development occur in the same situations as those encouraged and supported by the conduction of action research: those in which adult learning,
experiential learning, and reflection are occurring (Hartman, 2001; Manning & Payne, 1996). Teachers have noted that their involvement in action research activities has created new ways of thinking about their teaching (Poetter, 1997; Schumsky, 1958; Schwalbach, 2003).

However, current research has not made a connection between participation in action research and metacognitive growth in teachers. The purpose of this review of action research is to provide an overview of the activities involved in action research and to examine the activities that are both supportive of metacognitive growth and encouraged by action research. A link between action research and metacognition will provide instructional leaders with a further incentive to promote action research as a key component of instructional supervision and professional learning.

**Definition of Action Research**

Action research is a systematic inquiry of applied research conducted by practitioners to improve educational practices by solving specific problems to better understand the educational environment (Glanz, 1998; Mills, 2000; Schwalbach, 2003). The information gathered when conducting educational action research addresses school operations, enhances decision making, impacts teaching practices, and addresses the effectiveness of student learning (Glanz, 2003, Mills, 2000). Most researchers of action research describe the process of action research as being a cycle that involves identifying an area of focus, gathering data, analyzing and interpreting the data, and developing an action plan for improvement (Glanz, 1998; Mills, 2000). The process of gathering information increases the practitioner’s reflective practices, thus moving the individual or group to make positive changes to the school environment or student outcomes (Mills, 2000). While the focus in this study is teacher action research, action research...
can be conducted by many other individuals in the school setting, including principals, counselors, and other instructional leaders (Glanz, 2003, Mills, 2000).

Action research conducted by teachers offers many direct benefits to teachers and students, but the larger school community also benefits from such teacher research (Calhoun, 2002). Action research improves teaching so students will have more engaging and effective learning opportunities (Schwalbach, 2003). More encompassing outcomes exist as well, as the social system of the school can be influenced by teacher involvement to become an environment which fosters and expects formal learning (Calhoun, 2002).

In action research, the teacher determines the focus of study in the classroom or school (Schwalbach, 2003). As teachers increase their reflective practices during action research, they become empowered to view problems as opportunities for investigating possible interventions and strategies (McNiff, 2002). Theory and practice are integrated while teachers are engaged in this method of inquiry, and teachers gain additional insight into their own instructional practices while examining strategies which impact student learning (Schwalbach, 2003). Action research can be considered self-reflective practice as it involves such insightful and close examination of one’s practice. Action research “involves learning in and through action and reflection” (McNiff, 2002, p.15)

Action research is differentiated by this self-reflective component from the more traditional and empirical types of research in which research is conducted on other people (McNiff, 2002). While our understanding of the surrounding world is a goal of both traditional research and action research, important differences exist in the two approaches (Perry-Sheldon, 1987). In traditional research, the researcher may be examining the practices of another practitioner. However, as action research focuses on the individual’s examination of his or her
practice, there is no separation between the researcher and the practitioner (McNiff, 2002). As the goal of teachers who conduct action research is improving their own performance, the results are applicable to their own actions and pedagogical practices (Corey, 1949).

**History of Action Research**

Kurt Lewin originated the term action research around the year 1934. His perception of action research was a process that “gives credence to the development of powers of reflective thought, discussion, decision, and action by ordinary people participating in collective research on ‘private troubles’ that they have in common” (Adelman, 1993; cited in Mills, 2000, p. 6).

Both industry and social settings provided the forum in which Lewin’s ideas were developed (Eden & Huxham, 1999). The ways in which his ideas were applicable to the field of education were presented in Stephen Corey’s book *Action Research to Improve School Practices* (1953). The strong focus on action research diminished in the 1960’s due to the heightened focus on empirical research emphasized by the space program. However, action research became influential again during the early 1970’s with the work of such researchers as Lawrence Stenhose, Stephen Kemmis, Clem Adelman, and John Elliott, among others (McNiff, 2002). The strong focus of these researchers elevated the role of the educators to being individuals who would both be capable of and benefit from self-monitoring their practice. Encouraging teachers to participate in inquiry approaches to teaching was also perpetuated by such researchers during this time. (Elliott, 1976; Kemmis, 1993, McNiff, 2002).

Today, approaches to action research vary by geographical location and socio-political context. According to McNiff (2002), the approach to action research in America is in line with the progressive education movement and the work of John Dewey (Noffke, 1994). The focus of action research in the United Kingdom is on curriculum reform and increasing the
professionalism of teaching (Elliott, 1991), and the focus of Australian proponents of action research is on collaborative curriculum planning (Kemmis, 1993). The variations in the action research efforts are united through their efforts to produce positive outcomes for the children in our schools (Mills, 2000).

Theories Influential to Action Research

The two main theories of action research are known as critical (or theory-based) action research and practical action research. Critical action research has a philosophical foundation which is based upon critical theory. The focus of critical theory is that of seeking to liberate individuals through the process of gathering knowledge. Practical action research is more interested in the actual application of the activities involved in action research and does not have such a strong philosophical foundation (Mills, 2000).

Critical Action Research

Critical theory, upon which critical action research is based, has several basic purposes which are shared by social sciences, humanities, and action research (Kemmis, 1993; cited in Mills, 2000, p. 7):

1. Interest in processes for enlightenment.
2. Interest in freeing individuals from the confines of tradition, habit, and bureaucracy.
3. Commitment to participatory democratic processes for reform.

Critical action research is based on a postmodern ideology. Postmodernists espouse the importance of experience, and that knowledge is dependent on experience. They propose that truth is conditional and situational. From this perspective, teachers have not been supported by traditional research, as little connection has existed between such research and the practices of the classroom. As traditional research is not applicable to the daily actions of teachers, and it has
not been accessible to teachers, postmodernists do not view traditional research as a motivational tool for educators (Kennedy, 1997; cited in Mills, 2000, p. 8). From this perspective of postmodernism, action research is more meaningful to teachers than is traditional research, as action research is conducted in a teacher’s own classroom and applicable to a teacher’s own practice (Mills, 2000).

    Postmodern theory looks carefully at the modes of knowledge production, and it critiques assumptions which are typically accepted in traditional research (Stringer, 1996). Postmodern theory supports a problem-solving approach for teachers who want to examine their professional practices critically, as it acknowledges the participatory and democratic foundation which is implicit to action research. Postmodernists believe that the knowledge gained by teacher researchers through their critical examination of daily practices and ordinary events can result in teachers’ liberation (Mills, 2000).

    Practical Action Research

    Practical theory is the other major theory behind action research. Practical theory is based more on application than philosophy, and it assumes that teachers are capable of determining the research topics of their investigations. Practical theory also assumes teachers have a vested interested in professional development and school improvement, and they initiate such improvements. Practical action research also assumes that teachers will reflect on their instructional practices by systematically engaging in the gathering, analyzing, and data interpretation processes of action research (Mills, 2000).

    While differences do exist between the two theories, the commonalities which are present in the two theories are supportive of action research as a mode by which both children’s lives as well as teachers’ professional practices can be improved. Action research, through a
combination of both theories, provides a foundation upon which children’s lives can be improved and additional pedagogical information can be acquired (Mills, 2000).

Steps in Conducting Educational Action Research

While various models for conducting educational action research exist, the primary process of action research encompasses four basic steps: identifying a topic upon which to focus, collecting supporting data, analyzing and interpreting data, and developing a plan of action (Glanz, 1998). A short review of these steps follows to identify and to look critically at the specific processes in which teachers engage when conducting action research.

The first step is selecting a focus; the teacher identifies a problem about which he or she would like to investigate and formulates a specific question upon which to focus (Glanz, 1998). As the topic should be meaningful to each teacher researcher, each researcher should select an area of focus that involves teaching and learning, is within the individual’s locus of control, is something about which the teacher has a passion, and is something that the individual would like to change or improve (Elliott, 1991; Sagor, 1992). Identifying a topic could come through examining a variety of different topics relevant to the teacher researcher, including student outcomes, curriculum, instruction, school climate, and parental involvement (Glanz, 1998).

Part of the first step is reconnaissance, or preliminary information gathering. During reconnaissance, the teacher critically examines what is happening and identifies area upon which to focus (Perry-Sheldon, 1987). These reconnaissance activities involve an educator’s reflection and explanation on problems he or she encounters, as such activities allow the teacher researcher to define the focus of study (Mills, 2001). During reconnaissance activities, individual teachers closely examine their feelings about their educational values. They also examine the ways in
which their work as practitioners in the school and the encompassing arenas of community and education are inter-related (Kemmis & McTaggart, 1988; Sagor, 2000).

During this stage, the teacher clearly defines the problem by describing the situation specifically using who, what, when, and where questions (Mills, 2000). The teacher researcher’s problem usually gains additional clarity during this process, as the teacher is critically examining the reasons why the problem might be occurring. This stage concludes when the teacher has formulated a hypothesis which states the expected connections between the study variables (Elliott, 1991).

After completing reconnaissance, professional literature on the topic is reviewed to identify possible solutions. On-line resources, university libraries, and memberships in professional organizations can help provide research information (Mills, 2000). The concluding activity of selecting a focus is to write an action plan in which the purpose of the study is clearly described, variables are defined, and research questions are posed. The teacher should also include a timeline and methods for data collection in the action plan (Elliot, 1991; Kemmis & McTaggart, 1988).

The second step of the action research process is to collect data (Glanz, 1998; Sagor, 2000). Teachers should employ the use of triangulation, in which several methods of data collection are chosen, to ensure greater validity of their results than would be achieved with only one method of data collection (Glanz, 1998; Guba, 1981; Mills, 2000). The truth and accuracy of the researcher’s claim are established when findings are supported by several independent sources of data (Sagor, 2000). Data collection techniques can include experiencing, inquiring, or examining activities. Experience activities include those in which the participant observes either actively or passively. Inquiry activities include both informal interviews and structured
formal interviews, questionnaires, attitude scales such as likert scales and semantic differential scales, and standardized tests. Examining activities include investigations of archival documents, journals, maps, audio and videotapes, artifacts, field notes, and checklists (Mills, 2000; Sagor, 2000).

The third step of action research is data analysis and interpretation, in which the researcher carefully reviews the gathered data to identify patterns which will be used to establish categories (Schwalbach, 2003). One of the most widely used methods of data analysis used by action researchers is that of coding, in which data with similar characteristics are grouped. After groupings have been established, the researcher looks for patterns (Mills, 2000). During the interpretation step, the data analysis process becomes further refined as the researcher raises questions, makes connections between the teacher’s own experiences and the findings, and looks to colleagues, literature, or previous theories to further interpret and understand the findings. (Mills, 2000).

The fourth and final step of action research is action planning. During this step, the researcher decides what he or she should do with the information learned from the investigation. In this step, the researcher recommends interventions based on the findings. The researcher also identifies the individuals who will conduct the recommended activities, the individuals who will be informed of findings, and the individuals who will monitor the implemented activities and the resources that are necessary to ensure an effective and timely investigation (Mills, 2000).

**Quality of Action Research**

To ensure accurate results when conducting action research, the researcher needs to ensure validity through the process of triangulation. Triangulation occurs when data are gathered
from a minimum of three sources, which can include surveys, checklists, observations, videotapes, audiotapes, among others (Mills, 2000; Schwalbach, 2003).

**Benefits to Teachers**

Many teachers who have conducted action research describe a new way of thinking that impacts their approach to teaching overall, beyond the specific topics of their action research studies. The following quotes from the book entitled, *Changing Schools from Within*, edited by Gordon Wells (1994) reveal teachers’ increased self-awareness and self-regulation regarding effective teaching strategies:

But there has been so much more to my learning than that [strategies for teaching reading]. . . . Action research focused my attention and thinking on the issue of reading, enabled me to take some actions, and, by its very nature, ensured that I examine and re-examine the outcomes. This process, I suspect, will be an ongoing experience in my life in the classroom. (Maher, 1994, p. 96)

It is the sum total of these experiences . . . that helped challenge my assumptions and reshape my teaching, my learning, and my research. (Swartz, 1994, p. 126)

Transforming teaching into a learning enterprise is a journey without end. Becoming a learning teacher means recognizing that our understanding of what we’d like to have happen in our classroom and our ability to make sense of what students are trying to do will be in need of continuous revision. No sooner will some aspect of our instructional program be sorted out, than something will happen to raise further questions. (Newman, 1990, p. 126)
After experiencing this process [action research project], I concur with Nancie Atwell (1992) when she says, “the most thoughtful practitioner is the teacher who acts as a researcher.” I would go further and say teacher-researchers ultimately change not only their thoughts but their actions as well. Goswami and Stillman (1987) observed that teachers involved in research are transformed. They become theorists, articulating their intentions, testing their assumptions, and finding connections with practice. Certainly our action research was a key factor in my growth as a teacher. (Mayer, 1994, p.167)

Much research has been conducted regarding the many benefits experienced by teachers who have engaged in action research. Action research has been shown to increase effective teaching (Simmons, 1984). The practice of action research encourages teachers to look at their practice critically by critiquing their current teaching strategies, investigating alternatives, and reflecting upon the success of newly implemented strategies. Such critical analysis of teaching practices encourages teachers to learn in the practical and realistic setting of their classrooms. Teachers are also encouraged to develop their practices of reflection in a setting that is supportive of experiential and adult learning.

The types of activities involved in action research are similar to activities that we know encourage metacognitive growth. Both action research and metacognition contribute in similar ways to reflective thinking, experiential learning, and adult learning theories. In the effort to provide a further foundation upon which their commonalities can be examined, the following section reviews the literature on metacognition and the benefit of metacognition to self-regulation of teaching strategies. The subsequent section also reviews the links between
metacognition and action research and their connections to reflection, experiential learning, and adult learning.

Metacognition

John Flavell, who was influenced by the work of Jean Piaget, is regarded as a primary researcher in the field of metacognition (Hacker, 1998). Flavell introduced the term metamemory to indicate an individual’s ability to manage and monitor the input, storage, search, and retrieval of the contents of his own memory (Flavell, 1971). Flavell encouraged further study of metamemory; as a result, the study of metacognition has continued to the present time (Brown, 1980, 1987; Hacker, 1998; Hartman, 2001; Manning & Payne, 1996; Timpson, 2001).

The term metacognition refers to deliberate control of one’s cognitive activity (Brown, 1980). While variations of the definition of metacognition exist, it has two primary definitions in the literature. Flavell (1979, 1987) referred to both metacognitive knowledge and metacognitive experience. Flavell defined metacognitive knowledge as consisting of person factors, task factors, and strategy factors. The person factors refer to one’s beliefs about oneself and others as learners and knowers. Task factors refer to one’s understanding of the various demands of different learning tasks or goals. The strategy components represent an individual’s knowledge of the types of learning strategies that will likely increase the individuals’ learning or problem solving success.

According to Flavell, metacognitive experience includes both moments of conscious awareness of cognitive phenomena, which tend to be spontaneous, as well as the types of executive processing that are deliberate: planning, monitoring, and evaluating one’s execution of cognitive tasks (Flavell, 1979, 1987).
The majority of current research about metacognition follows along these two major distinctions defined by Flavell: knowledge of cognition and regulation of cognition (Moore, 2004). Current research focusing on the knowledge of cognition includes declarative and procedural knowledge (Paris et al., 1983). Declarative knowledge encompasses the processes involved in being aware that something is the case, such as facts, opinions, theories, hypotheses, and attitudes about oneself, others, and world events (Gupta & Cohen, 2002). Procedural knowledge is knowledge about how to perform cognitive activities (Anderson, 1990; Hunt, 1989).

The other branch of metacognitive research, the regulation of cognition, focuses on the self-regulatory and executive functions of cognition which include planning, predicting, monitoring, testing, revising, checking, and evaluating activities (Hartman, 2001; Moore, 2004). Regulation of cognition is a higher order thinking process that directs the other cognitive skills (Paris, Cross, & Lipson, 1984). These self-regulatory and executive functions are enveloped by branch of cognitive knowledge and research known as conditional knowledge (Garner, 1990). Conditional knowledge refers to the awareness of the value of learning and using specific strategies, learning the most appropriate times to enact the strategies, and monitoring the impact of the employed strategy on the learner (Hartman, 2001).

**Self-Regulated Learning**

Self-regulated learners decide the most effective strategies to use prior to beginning a given task, assess the progress and comprehension of the task using metacognitive processes, and change strategies based on conditional knowledge of what would be most effective (Schunk & Zimmerman, 1998). Self-regulated learners have been defined as “metacognitively,
motivationally, and behaviorally active participants in their own learning” (Schunk & Zimmerman, 1989, p.4). According to Hartman (2001),

Self-regulated learners metacognitively plan, organize, set goals, and self-monitor their performance; they motivationally self-initiate, self-react, and display persistence; they behaviorally arrange or create environments where it is easy to concentrate and to access needed resources. (p. 206)

Most models of metacognitive control or self-regulatory strategies include three types of strategies: planning, monitoring, and regulating. Strategies that are inclusive of planning include setting goals, generating questions relevant to upcoming activities, and analyzing problems. The thinking involved in such planning strategies enables the individual to activate prior knowledge, which facilitates the learner’s organization and understanding of the upcoming activity (Schunk & Zimmerman, 1998). Another part of this initial cycle of self-regulation is forethought, in which the individual analyzes the upcoming tasks and combines self concepts he or she holds regarding self-motivation and self-efficacy (Hartman, 2001).

Monitoring one’s thinking is the second component in the cycle of self-regulated learning (Hartman, 2001). Self-monitoring is a primary component of metacognitive activities as it involves tracking attention, self-questioning, and self-reflection (Schunk & Zimmerman, 1998). Self-monitoring provides the metacognitive awareness by the functioning of individuals’ cognitive and behavioral abilities can be enhanced (Ellis & Zimmerman, 2001). Self-instruction, self-observation, and task strategies are also enveloped by self-monitoring (Hartman, 2001). To be able to regulate their learning, individuals must be able to monitor and assess their learning (Schunk & Zimmerman, 1998).
These monitoring strategies are closely followed by regulation strategies. When individuals notice that they are having difficulty comprehending given activities, the individuals change their thinking behavior so can better understand. Such regulatory strategies help learners modify their thinking behaviors so they are better enabled to understand (Schunk & Zimmerman, 1998). During this phase of regulation, self-reflection emerges. Self-reflection includes the components of self-judgment in which individuals engage in self-evaluation, causal attribution, and self-reaction (Hartman, 2001).

*Self-Reflective Practice*

Self-regulated learning can be extended through the practice of self-reflection, in which learners monitor and evaluate their performance during their engaging in the learning process. Self-reflection also enables the learner to adjust performance by modifying strategies and determining the most effective strategies by which they can accomplish their goals (Schunk & Zimmerman, 1998). Self-reflective practice also includes self-monitoring and self-verbalization. Self-verbalization plays a fundamental role in the extension of the process of self-reflection, as it provides the “voice” that motivates individuals to continue learning, applying, and using self-regulation strategies. Individuals who self-verbalize focus and maintain their attention at higher rates than individuals who do not self-verbalize. Thus, individuals who self-verbalize retain newly learned information at a higher rate than individuals who do not self-verbalize (Schunk, 1982). Positive learning opportunities compound for the individual who is self-verbalizing, as the individual is likely to develop a strong sense of personal control and a sense of self-efficacy to motivate the learner to continue learning.
Metacognitive Theories

Metacognitive and self-regulation theories that support the foundations and benefits of action research include social-cognitive theory and constructivist theory. Social-cognitive theory accounts for the variables involved in self-regulation that further influence human functioning. Constructivist theory suggests that individuals create their own learning based upon what is important to them.

Social-Cognitive Theory of Self-Regulation

According to social-cognitive theorists, humans function based on a series of triadic reciprocities which involve behavioral, environmental, and personal variables. Personal variables, such as self-efficacy, further influence the behavioral variables by impacting an individual’s determination and persistence (Schunk & Zimmerman, 1998). Personal variables are impacted by behavior variables when an individual engages in new tasks and is aware of his or her progress. This mental awareness further elevates the individual’s self-efficacy, as the individual is aware of his or her ability to learn.

According to social-cognitive theorists, the three sub-processes that make up self-regulation are self-observation (monitoring) and recording, self-judgment, and self-reaction. These sub-processes resemble the monitoring and regulating strategies from the models of metacognitive control. Self-observation (self-monitoring) occurs as an individual purposefully attends to specific aspects of one’s behavior. The individual can be motivated to improve when this focused observation (or monitoring) impacts one’s perceptions of goal progression (Schunk & Zimmerman, 1998). Self-recording activities can increase the positive effects of self-observation and monitoring (Mace et al., 1989). Self-monitoring can also encourage individuals to continue trying to learn and improve upon new approaches that they might have discontinued.
if they were not engaging in self-monitoring, as they may realize the benefits about which they became aware through such self-monitoring and recording (Pressley et al., 1990; Schunk, 1987, Schunk & Zimmerman, 1998).

   Self-judgment occurs when comparing one’s current performance with that of a standard. Such standards emanate from observations of others or goals that are set related to social comparisons (Bandura, 1986). An individual’s determination of appropriate behavior can be occur when the individual compares the performances of others with his or her own performance (Schunk & Zimmerman, 1997).

   Self-reaction occurs when an individual evaluates one’s responses to his or her own performance. When one believes that he or she is progressing acceptably, self-efficacy and motivation are affected in a positive manner (Schunk, 1996). Even self-evaluations which are negative can further motivate individuals to improve if they believe they are capable of progressing. The only time that motivation suffers is when the individual does not believe he or she has the ability to succeed or that other factors will not prove beneficial (Schunk & Zimmerman, 1998).

*Theory of Constructivism*

   Another theoretical framework upon which the self-regulation component of metacognition is based is constructivism, which focuses on the individual’s thinking and searching for meaning (Schunk, 1996). The assumption presented by this theory is that people are active learners and that they need to construct knowledge for themselves. This perspective is founded on the idea that humans reach understanding when they connect past knowledge and experiences with new experiences and interactions (Moore, 2004).
From this perspective of constructivism, manipulation or social interaction are the means by which learners become actively involved. Learners should observe, collect data, generate and test hypotheses, and work collaboratively with others to embrace the ideals set forth by proponents of constructivism (Schunk, 1996). The theory of constructivism also supports the important role that reflection provides to the learner by providing the feedback so beneficial to the learning process. Group collaboration, discussion, or individual reflection are modes for such feedback (Rogers, 1986).

The two main interpretations of constructivism that exist in the literature are psychological and social constructivism. Both of these interpretations seek to define the primary influence of cognitive development. Psychological constructivism builds upon the work of Piaget and states that individuals approach learning with a combination of their own ideas, opinions, and beliefs derived from previous thoughts and experiences. Cognitive development is experienced by the learner when the individual is placed in dilemmas which encourage the learner to modify ideas to connect to align with the current experience. This type of constructivism is also sometimes referred to as *endogenous constructivism*.

Social constructivism builds upon the work of Vygotsky and states that learning occurs in social interactions which occur in the social environment of the learner (Moore, 2004). This form of constructivism is sometimes referred to as *exogenous constructivism*, which proposes that knowledge acquisition is acquired though the reconstruction of existing structures.

The bridge between these two variations of constructivism is referred to as *dialectical constructivism*, which states that learning occurs as an individual interacts with his or her social environment, then makes corresponding connections between the knowledge gained in the social arena to the previous knowledge obtained by past thoughts and experiences.
**Benefits of Metacognition**

A great focus of metacognitive growth and training has been to teach these skills to students in the classroom setting. Many studies have discussed the numerous benefits of “thinking about thinking” for students (Hartman, 2001). While cognitive skills are important for students, researchers have focused on the numerous reasons that metacognitive skills should be emphasized (Wagner & Sternberg, 1984). Some reasons are (a) that the long-term benefits of cognitive skill training and the ability to transfer the use of such skills to new tasks appear to depend on training in both the metacognitive and cognitive levels and (b) that students need training in planning, monitoring, and using relevant information (Wagner & Sternberg, 1984).

By using self-regulation strategies effectively, students can develop voluntary control over their own learning (Pressley, Snyder, & Cariglia-Bull, 1987). Teachers can increase students’ awareness and control of learning by encouraging students to carefully reflect on their thinking and learning during all stages of academic tasks. Teachers should encourage students’ reflection on thinking and learning that occurs prior to their engaging in academic tasks, the thinking that occurs during the academic task, and the thought processes which exist after the completion of the task. (Hartman, 2001). Research has shown that high achieving students have more metacognitive awareness and self-regulation strategies than low achieving students.

**Teacher Metacognition**

Being cognizant of thinking allows teachers to track and evaluate the progress being made regarding the use of effective teaching strategies. Metacognition can help teachers be aware of the thinking strategies they employed when positive outcomes occurred, and such awareness can increase the probability of these modes of thinking being used in future teaching opportunities. Marchant (2001) linked metacognition and reflection with teaching and coined
the term *metateaching*, or the ability to think about the thinking of teaching. Metacognitive skills involve knowing what to do and how and when to do it. These components of thinking are as relevant to teachers’ thinking as they are to students’ thinking (Marchant, 2001).

Teachers hold a pivotal role in the improvement of student achievement (Brophy, 1986). Because effective teachers are lifelong learners, they are continuously examining their teaching strategies and determining the effectiveness of such strategies. When necessary, teachers change instructional strategies that have not been effective. Teachers will vary instructional techniques based on the previous knowledge and experiences of the students, the subject matter, and the lesson objectives (Hartman, 2001). Such awareness and self-regulation are fundamental to effective teaching. Effective teachers are aware, they self-monitor, and they self-regulate (Good & Brophy, 1984).

Teachers’ metacognitive control impacts the effectiveness of the instruction that students receive, as metacognitive control is prerequisite to teachers’ effective implementation of curriculum and instructional methods. Teachers must be able to use metacognition to effectively control and modify instruction for their students (Hartman, 2001; McCormick, Miller, & Pressley, 1989). Effective teachers must be cognizant of how to customize information to students’ backgrounds and abilities in a variety of situations (Manning & Payne, 1996). Teachers must understand the needs of each of their students and must understand the goals they are seeking to achieve. Teachers who do have metacognitive control regarding their instructional strategies make learning more meaningful to students (McCormick, Miller, & Pressley, 1989).

Research that has been conducted on teachers’ thought processes regarding instruction shows that metacognition impacts instruction during planning instruction, monitoring and regulating instruction, and assessing and revising instruction (Clark & Peterson, 1986; Artzt &

The ways that self-regulation skills are beneficial to teachers can be seen when examining the activities in which a teacher engages prior to, during, and after instruction (Hartman, 2001). Prior to instruction, teachers must plan for differentiated instruction to meet students’ various ability and interest levels. During instruction, metacognitive self-monitoring and self-regulation assist teachers in making quick and important decisions about instructional delivery, managing students’ behavior, and interacting with the students (Manning & Payne, 1996). Certainly, metacognition plays a key role in teachers’ thought processes after instruction, as effective teachers reflect on what they teach, why they teach it, and how they teach it (Hartman, 2001; Manning & Payne, 1996). Teachers who teach metacognitively are also aware of the importance of the feedback that they provide to students, and they reflect on the effectiveness of their feedback (Hartman, 2001).

Since the processes that are involved in metacognition are central to learning and development (Brown, 1987), metacognition for teachers is a critical and necessary skill. The ability to monitor and direct thinking as it relates to problem solving is necessary for effective teaching. Teachers must be able to connect to their own personal and professional metacognitive development prior to encouraging such development in their students (Manning & Payne, 1996). Furthermore, the more teachers can to identify their own strengths and limitations, the higher their abilities are to identify their students’ strengths and limitations. (Hartman, 2001).

Due to the important role that metacognition plays in teachers’ learning and development, some educational models have been designed to encourage thinking and self-regulation. For
example, Novak’s comprehensive educational theory incorporates how teachers structure and use knowledge to cultivate meaningful learning. Within the model, theory-based graphic organizers such as concept maps are recommended to aid teachers’ planning and conducting of lessons (Hartman, 2001).

Assisting teachers’ metacognitive growth has also become a component of some teacher preparation programs. Hartman has used materials and activities for over twenty years to facilitating metacognitive instruction of educators with whom she works and trains. She has worked with in-service and pre-service teachers, as well as college tutors, on applying metacognitive strategies to curriculum development and instructional improvement (Hartman & Sternberg, 1993). The methods she employs include thinking aloud, using graphic organizers, and self-questioning techniques (Hartman, 2001).

In addition to programs that enhance teachers’ metacognitive growth, practice-focused resources exist to foster the metacognitive thinking of pre-service teachers. Posner (1985) authored a book for pre-service teachers that includes questions and exercises that encourage teachers to reflect by recording their reactions to ideas. Hartman (1993) authored an interactive book for college tutors that promotes metacognitive activity; they are encouraged to plan, monitor, and evaluate. Manning and Payne (1996) also authored a comprehensive resource for teaching metacognitively.

While the majority of focus on encouraging metacognitive growth is aimed at pre-service instruction in teacher preparation programs, some resources have also been developed to encourage the metacognitive growth of in-service teachers. One such example is a concept map suited specifically to encouraging “metateaching” in educators. This concept map is called the instructional map; it consists of three continuums that overlap points of focus: product and
process, individual learning and group learning, and teacher/student centeredness. This map can be used in a variety of settings, from planning a lesson to reflecting upon the lesson to planning the climate of the classroom. This instructional map can also be used to aid the instructor in planning various types of instruction, from creativity to discovery learning (Timpson, 1999). Timpson designed the map with the goal in mind that instructors would be able to reflect on their teaching and develop working overviews of the principles and practices that they wanted to cultivate.

Connecting Action Research and Metacognition

The activities in which teachers engage when conducting action research appear to be the types of activities that encourage metacognitive growth. Much research that focuses on the ways that adults learn most effectively places emphasis on metacognition: adult learning theory, experiential learning, and reflection. Such research also promotes the benefits to teachers of participating in action research. The following sections on adult learning theory, experiential learning, and reflection are included to further demonstrate the connection between action research and metacognition. The concluding paragraphs of each of these sections include specific references from the current literature that demonstrate the correlation between action research and metacognition.

Adult Learning Theory

One of the leading proponents of adult education, Malcolm Knowles (1970), proposed the idea of andragogy: “the art and science of helping adults learn” (p. 38). This concept includes four assumptions regarding adult learning that are characteristically different from child learning: (a) adults have a psychological need to be self-directing; (b) adults bring an expansive reservoir of experience that can and should be tapped in the learning situation; (c) adults’ readiness to
learn is influenced by a need to solve real-life problems often related to adult developmental tasks; (d) adults are performance centered in their orientation to learning and want to make immediate application of knowledge.

Adult learners are motivated to learn things they believe they need to learn, based on their experiences. Knowles (1970) believed that adults would be interested in initiating the topics of study based on their interests and needs, instead of being told what they would like to learn by their instructors. Knowles also discussed a fifth assumption that encompasses the others: adult learning is primarily intrinsically motivated. While some have questioned the exclusiveness of these assumptions to adult learners, they continue to be accepted as a broad guide to thinking about adult learning.

Another adult learning theorist, Mezirow (1990), put forth his theory of perspective transformation, a change in thinking that often accompanies adult learning. Transformational learning is believed to follow a confusing or disorienting dilemma that interrupts the normal routines of life. When combined with reflection and action, the adult is enabled to be cognizant of assumptions guiding his or her life and can act accordingly on this knowledge. This theory suggests that reflective and critical thinking are necessary to teacher learning and instructional improvement efforts (Glickman, Gordon, & Ross-Gordon, 2000). His theory is based on the individual’s understanding of experience and inner meaning. Mezirow (1990) stated that to make meaning means to make sense of an experience; we make an interpretation of it. When we subsequently use this interpretation to guide decision making or action, then making meaning becomes learning. We learn differently when we are learning to perform than when we are learning to understand what is being communicated to us. (p.1)
Adult Learning Theory and Action Research

The components of adult learning theory complement the goals of action research. Adults are motivated to learn things they believe they need to learn (see Table 2.1). Action research allows the adult to select the specific areas to learn based on one’s experiences in the classroom, to initiate the topic of study based upon one’s interests and needs. Action research also provides an opportunity for the reflective and critical thinking that are necessary, according to Mezirow, for learning and improvement to occur. McGregor (1998) argued, “Adults learn, retain, and use what they perceive is relevant to their professional needs.” This idea is echoed by York-Barr et al. (2001): “Knowledge, techniques, and processes that improve educators’ effectiveness with students are powerful motivators for learning” (p.32)

The connection between action research and adult learning is further strengthened by Vella’s (1994) Principles for Effective Adult Learning, which includes praxis, defined as action with reflection or learning by doing, as one of the requirements for adult learning. Action research promotes learning by doing and action with reflection, another link between action research and adult learning theories.

Adult Learning Theory and Metacognition

Aspects of adult learning theory also complement the activities that require and refine metacognitive self-regulation (see Table 2.1). Both value the individual’s need to be self-directing, to apply one’s experience in real-life settings, and to apply newly acquired knowledge. Both adult learning and self-regulation also allow adults to learn the things they feel they need to learn. A study conducted by Roth (1996) combined the needs of adult learners with what is known about metacognition. He asserted that a competent learner is one who is alert to the processes of self-questioning, monitoring, and regulating. Directly citing Schmitt and Newby
(1986), Roth describes the self-regulatory process as “checking and evaluating to determine whether the task matches preconceived notions about it, whether selected strategies are working, whether task performance is adequate, or whether comprehension is proceeding as it should” (p. 30).

The ways that adult learning theory correlates with metacognition is summed up very well by the following comments of a teacher reflecting on her action research experience:

As I look back over my learning for the last few months, I understand more fully the significance of what Douglas Barnes (1976) had to say about the difference between knowledge that is given to us by others, because they think it is important, and the knowledge that we construct for ourselves, as we take what we know and put it into action, revising and extending it in the light of our own experience. (Maher, 1994, in Wells, 1994, p. 97)

Susan Imel (2002) further supported the correlation between adult learning and metacognitive strategies, stating that successful adult learners use a range of metacognitive skills. Learners who are skilled in metacognitive self-assessment and are aware of their abilities are more strategic and perform better than those who are unaware (Rivers, 2001; Schraw & Dennision, 1994).

Table 2.1

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<tr>
<th>Connections of Adult Learning to Action Research and Metacognition</th>
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<tr>
<td><strong>Relation to Action Research</strong></td>
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<tr>
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<td>Provides an opportunity for the reflective action and critical thinking that are necessary for learning and improvement to occur (Mezirow, 1990).</td>
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</table>

**Experiential Learning**

An extension of adult learning research, experiential learning, is highly supportive of the activities involved in action research and self-regulation. The research on experiential learning concentrates on learning “hands-on.” Such research has found that much of the learning that occurs in the workplace is more incidental and informal than the formal, job-training seminars (Glickman, Gordon, & Ross-Gordon, 1998). Workplace environments that foster informal learning are those that encourage proactive, critical reflection and creativity (Marsick & Watkins, 1990). Implications of this research for the school setting have been suggested by theorists, including Smylie (1995), who considered the following characteristics to be important to school learning environments that stimulated teacher learning: (a) teacher collaboration, (b) shared power and authority between teachers and administrators, (c) emphasis on egalitarian, talent-based treatment of teachers over hierarchical status differences, (d) variation, challenge, autonomy, and choice in teachers’ work in the classroom and the district, (e) collaboratively developed goals and feedback mechanisms, (f) integration of work and learning, and (g) accessibility of external sources of learning.
Johnson and Johnson (1999) provide further support for experiential learning. They noted that experiential learning is the generation of an action theory from one’s previous experiences and one’s consistent striving to improve effectiveness through modification. They promoted experiential learning over the more traditional methods of information and knowledge acquisition. They noted that the positive effects of experiential learning were evident when the learner’s cognitive structures were changed, attitudes were modified, and their pool of behavioral skills was increased. These three elements work in unison for positive change.

The process of experiential learning is cyclical as well. A successful cycle would include taking action based upon one’s current action theory, examining the consequences of the action and receiving feedback, reflecting on the success of the actions and revising the action if needed, and implementing the revised action theory. The positive outcome of the thought processes involved in the experiential learning cycle is based on a series of principles set forth by Kurt Lewin (1948): (a) Effective experiential learning will affect the learner’s cognitive structures, attitudes and values, perceptions and behavioral patterns; (b) People will believe more in knowledge they have discovered themselves that in knowledge presented by others; (c) Learning is more effective when it is an active rather than a passive process; (d) Acceptance of new action theories, attitudes, and behavioral patterns cannot be brought about by a piecemeal approach. One’s entire cognitive-affective behavioral system has to change; (e) More than information is required to change action theories, attitudes, and behavioral patterns; (f) More than firsthand experience is required to generate valid knowledge; (g) Behavior changes will be temporary unless the action theories and attitudes underlying them are changed; (h) Changes in perceptions of oneself and one’s social environment are necessary before changes in action theories, attitudes, and behavior will take place; (i) The more supportive, accepting, and caring the social
environment, the freer a person is to experiment with new behaviors, attitudes, and action theories; (j) In order for changes in behavior patterns, attitudes, and action theories to become permanent, both the person and the social environment have to change; (k) It is easier to change a person’s action theories, attitudes, and behavioral patterns in a group context than in an individual context; and (l) A person accepts a new system of action theories, attitudes, and behavioral patterns when he or she accepts membership in a new group.

Johnson and Johnson (1999) further stated that information and change can initiate an interest in change, but they alone will not provide the impetus necessary to bring about the change. Firsthand experience without sufficient experimentation and reflection does not bring about valid knowledge. They also emphasized the importance of changing one’s action theories and attitudes as being a necessary prerequisite for embracing a new behavior.

*Experiential Learning and Action Research*

The components of action research complement the components of experiential learning theories (see Table 2.2). Action research is emphatically hands-on, integrates work and learning, is conducive to and encourages teacher collaboration, and generates action theories from previous experiences. Action research is constantly encouraging improvement of one’s effectiveness through modification. It supports experience over formal learning and is designed to help people discover knowledge themselves. It makes teachers active rather than passive participants in the learning process. As action research is cyclical in research, reflection, and practice, it encourages the imbedding of the learned information.

Links between action research and experiential learning are directly cited in current literature. Tim McMahon (1999) compared Kolb’s experiential learning cycle and the cycle of
action research and noted that they both emphasize the importance of reflection on action and experience:

The major concordance between Kolb’s learning cycle and the action research spiral is that they both emphasize the importance of reflection on action and experience. In both models the reflection is intended to be transformative...when the learning cycle is used within the reflective practitioner model...emphasis is put on the externally observable results of transformation in terms of improvements to practical actions (either as a teacher or student). The requirement for reflection to be reflexive has clear similarities with the use of reflexive critique in action research, thus a greater concordance with the action research spiral becomes apparent (p. 167).

Researching the benefits of action research for reflective practice in school, York-Barr (2001) stated that “Learning from practice…requires learners to think critically about the meaning of real-world experiences” (p.72).

**Experiential Learning and Metacognition**

The activities in which one engages while involved in experiential learning provide a forum in which metacognitive growth can flourish (see Table 2.2). Henton (1996) states:

The experiential learning cycle reminds us of the importance of metacognitive activity to cognitive development. At least half of the cycle prompts metacognition, or thinking about thinking. Once students move past reflecting on the activity, they draw generalizations and abstractions, then work to extend and apply. The work of this phase of the cycle is to step back from the activity and look at it from a new perspective and with the goal of learning from it (p. 46).
While engaging in hands-on learning, the individual is given opportunity to apply thinking directly to real life tasks. As self-regulation is based upon the individual being able to plan, monitor, reflect, and adapt strategies as needed, the forum provided by experiential learning is optimal for promoting metacognitive growth. McLoughlin (1999) states:

According to educationists, the experiential learning model offers an excellent framework for designing, developing, and delivering diverse learning experiences for adults, and offers instructional designers a tool for planning and designing learning activities (Rowntree, 1992; Tennant, 1988; Mulligan & Griffin, 1992). For instance, reflection and conceptualization on experience or on a learning event may lead to the forms of higher order thinking that enable learners to challenge and revise ideas, and thus engage in goal oriented, on-going learning (Anderson & McMillan, 1992; Simons, 1992) (p. 227).

Table 2.2

Connections of Experiential Learning to Action Research and Metacognition

<table>
<thead>
<tr>
<th>Relation to Action Research</th>
<th>Relation to Metacognition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action research supports experience over formal learning, and is designed to help people discover knowledge themselves (Mills, 2000).</td>
<td>“The experiential learning cycle reminds us of metacognitive activity to cognitive development. At least half of the cycle prompts metacognition, or the thinking about thinking” (Henton, 1996, p. 46).</td>
</tr>
<tr>
<td>Both experiential learning and the cycle of action research emphasize the importance of reflection on action and experience (McMahon, 1999).</td>
<td>“The experiential learning model offers an excellent framework for designing, developing, and delivering diverse learning experiences for adult learners (Rowntree, 1992; Tennant, 1998; Mulligan &amp; Griffin, 1992). Reflection and conceptualization experience or on a learning event may lead to the forms of higher order thinking that enable learners to challenge and revise ideas, and thus engage in goal oriented, on-going learning” (Anderson &amp; McMillan, 1992; Simons, 1992) in (McLoughlin, 1999, p. 227).</td>
</tr>
</tbody>
</table>
Learning from practice...requires learners to think critically about the meaning of real world experience (York-Barr, 2001).

Self-regulated learners decide which strategies to use prior to beginning a given task, assess task progress and comprehension using metacognitive processes, and change strategies based on conditional knowledge of what would be most effective (Schunk & Zimmerman, 1998).

Reflection

Much research has been done to explore the cognitive processes of teachers, especially reflective thinking, which has been shown to be very important in the development of effective teaching strategies. Dewey (1933) defined reflection as “active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it tends” (p. 6). Dewey (1933) further suggested that the basis of reflective thinking “involves (a) a state of doubt, hesitation, perplexity, and mental difficulty in which thinking originates, and (b) an act of searching, hunting, and inquiring to find material that will resolve the doubt, settle, and dispose of the perplexity” (p. 12). Osterman (1990) identified several purposes of reflection, including greater self-awareness, development of new knowledge about professional practice, and a broader understanding of problems confronting practitioners.

Roth (1989) identified many cognitive processes common to reflective practitioners: considering and reconsidering options, testing, adapting, suspending judgment, comparing and contrasting, viewing from various perspectives, seeking alternatives, emphasizing inquiry as a tool of learning, hypothesizing, analyzing, and evaluating, etc. Reflective thinkers engage in many cognitive activities. Such reflection is custom-made for effective teaching, as teachers must engage in strategies to increase self-awareness and must develop new knowledge about the
profession. Teaching is complex because the knowledge is contextual, interactive, nonroutine, and speculative (Blase & Blase, 2003). According to Clark and Lampert (1986), an effective teacher is required to (a) reframe the experiences of teaching in previously unheard of ways, (b) develop problem solving skills, new thinking patterns, and alternative perspectives, (c) generate myriad alternatives, (d) build hypotheses based on knowledge, and (e) assess actions to create new learning.

Reflection on teaching strategies such as these has been encouraged by many as a way to increase teacher awareness, to lead teachers to question their effectiveness and thus increase their cognizance regarding their teaching practices, to interpret the outcome of their actions, and to make corresponding action improvements (Clark & Lampert, 1986; Colton & Sparks-Langer, 1993; Mayer, 1992; Ross & Hannay, 1986). Effective teachers are able to reflect-in-action (Schon, 1988) when they respond to the needs of a situation. Schulman (1987) defined reflection as:

what a teacher does when he or she looks back at the teaching and learning that has occurred, and reconstructs, then reenacts, and/or recaptures the events, the emotions, the accomplishments. . . . Reflection is not merely a disposition . . . or a set of strategies, but also the use of particular kinds of analytic knowledge brought to bear on one’s work. (p. 18)

From the perspective of reconstructing experience, reflection enables transformation (Kowal, 1994). Such reflection may require teachers to carefully analyze their practice by examining their assumptions about teaching, and then reconsider their practice after reviewing these assumptions (Grimmett, Erikson, MacKinnon, & Reicken, 1990).
Reflection needs to be related to practice to be beneficial. According to York-Barr et al. (2001), “It cannot be overstated that the focus of reflection should be relevant to practice” (p.32). Ongoing reflection helps to identify which issues are most important for continuing professional growth of the individual and, consequently, improvement for the school (Zepeda, 1999).

Because effective teachers are also effective learners, the inquiry-oriented classroom fostered by action research provides an atmosphere in which “while the students learn, the teacher learns, too” (Duckworth, 1987). A community of inquiry in which both teachers and students learn from each other emerges when teachers and students are involved in each other’s inquiries (Wells, 1994).

*Reflection and Action Research*

Reflection is an inherent portion of the strategic action involved by action research (see Table 2.3). The activities involved in the implementation of action research are highly conducive to the promotion of reflection and “reflection-in-action” (Schon, 1983). Reflection can be encouraged by engaging in action research (Clark, 1995). York-Barr et al (2001) state:

Action research is a structured way to promote reflection on practice and to contribute to the overall development of a professional-learning culture in schools (p. 72).

Action research encourages reflection by increasing awareness of teaching strategies and by leading teachers to question the effectiveness of such strategies. Action research also encourages teachers to analyze the consequences of their actions and to make improvements. The benefits to teachers of increased reflection incurred while engaging in action has been documented by many researchers (Bennett, 1994; Glanz, 2005; Seider & Lemma, 1994; Wells, 1994). Glanz (2005) cites a teacher’s enthusiasm for action research:
“Employing action research engenders greater feelings of competence in solving problems and making instructional decisions. In the past I never really thought about the efficacy of my teaching methods to any great extent. The time spent in this project directly impacts on my classroom practice. I’m much more skeptical of what really works and am certainly more reflective about what I do” (p. 18).

Seider and Lemma (2004) stated that many teachers attributed making reflection more of a conscious effort as a result of participating in action research:

“The whole reflection process…it’s made such a difference in my thinking as a teacher. We get caught up in the do-do-do all the time and not enough thinking about why we’re doing, what we’re doing, or the impact of what we did on children” (p. 225).

“It was new thinking at the time. Seeing it as part of our role as teachers was new then. You stepped out to be an observer and reflect” (p. 225).

“I always was reflective but before I never thought it out in any depth. That was my reflection…I just said that was awful but never cared to think about why. Now I consider all types of alternatives” (p. 226).

Reflection and Metacognition

Reflection is also a critical component of metacognition (see Table 2.3). A way of thinking about thinking, metacognition is a form of reflection-in-action, which is one of the most sophisticated ways to reflect (York-Barr et al., 2001). Reflection provides a basis for thinking
about possible changes, and it is a basis upon which the actions of metacognitive self-regulation are based (Hartman, 2001). Reflection must take place prior to deciding which areas of teaching need improvement (Schon, 1983). Reflection is prerequisite to monitoring and regulating one’s thinking (York-Barr et al., 2001). Such metacognitive thinking takes reflection a step further and helps people regulate and apply reflective thinking (Marchant, 2001).

Table 2.3

Connections of Reflection to Action Research and Metacognition

<table>
<thead>
<tr>
<th>Relation to Action Research</th>
<th>Relation to Metacognition</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Action research is a structured way to promote reflection on practice and to contribute to the overall development of a learning culture in schools” (York-Barr et al., 2001, p. 72)</td>
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<tr>
<td>Benefits to teachers of increased reflection incurred while engaging in action research have been documented by many researchers, including Bennett (1994), Glanz (2005), Seider &amp; Lemma (2004), and Wells (1994).</td>
<td>Reflection is prerequisite to monitoring and regulating one’s thinking. Metacognitive thinking takes reflection a step further and helps people regulate and apply reflective thinking (Marchant, 2001).</td>
</tr>
</tbody>
</table>

Implications of Connection Between Action Research and Metacognition

Both action research and metacognition share principles with reflective thinking, experiential learning, and adult learning theories. As these activities are also those in which metacognitive development flourishes, the teachers who are conducting educational action research may be experiencing an added benefit of action research: increased metacognitive
development of teaching practices above and beyond the “know-how” of the given studied task to a more “know-when-and-where” to act upon new information.

Information about the ways in which adults learn the best is of high importance to instructional leaders, those ultimately responsible for encouraging the growth and development of the teachers in the school. The more opportunities for growth presented that are compatible with current research on the ways in which adults learn, the more teachers will be engaged in the types of instruction that are most conducive to stimulating increases in student achievement.

While action research has been acknowledged as being beneficial in a variety of arenas to teacher growth and development (Mayer, 1994; McNiff & Whitehead, 2000; Seider & Lemma, 2004), it still has not been embraced by the field of instructional supervision as a method of fostering instructional improvement (Glanz, 2005). Because action research and metacognition share components that are conducive to reflective thinking, adult learning, and experiential learning, a link should be made between action research and metacognition. Through demonstrating a link between the two, administrators who are trying to foster instructional improvement will be more likely to promote action research.
CHAPTER 3

METHODOLOGY

Introduction

The purpose of this study was to describe teachers’ perceptions of the impact of action research on metacognitive growth. This study examined teachers’ experiences while engaging in action research, and the study examined the meaning these experiences had for them in relation to their metacognitive growth regarding teaching practices.

This chapter contains a discussion of the theoretical framework of symbolic interactionism, the context of the study, data sources, and the methodological framework of grounded theory which guided the data collection and analysis procedures. This chapter also discusses the issues of reliability, validity, and control of bias.

Theoretical Framework: Symbolic Interactionism

The theoretical framework that guided this study of teachers’ perceptions of the impact of action research was symbolic interactionism. The term *symbolic interactionism* was coined by Blumer (1969) to encompass “activity in which humans interpret each other’s gestures and act on the basis of meaning yielded by interpretation” (pp. 65-66). The primary focus of symbolic interactionism is the nature of social interactions. Symbolic interactionists believe that individuals’ actions are the result of their interactions with others and their interactions within themselves (Charon, 1998). Symbolic interactionism grew from the work of Cooley (1902), Dewey (1933), and Mead (1934), who believed that the primary influence on human actions is
within an individual instead of an external influence. Blumer (1969) analyzed Mead (1934) when developing a framework for symbolic interactionism.

When defining symbolic interactionism, Herbert Blumer (1969) drew upon the work of Charles Darwin, John Herbert Mead, John Dewey, and others. The primary influence on Blumer was Mead’s philosophy of pragmatism. This philosophy has as its premise that human beings are active interpreters of all things in their environment. Individuals seek to define the world around them in an effort to define reality. Blumer also believed that humans test and judge knowledge by its usefulness. Humans remember perspectives, facts, ideas, and definitions when they are determined to be applicable to the individuals’ lives. Objects can also be defined in a variety of ways, each dependent on the usefulness of the object. Accordingly, an object can have a variety of uses. Mead believed that people can be understood best by their actions, including physical and observable ones, as well as thinking actions. Consequently, we should study humans through what they think in addition to what they do (Mead, 1934).

Blumer (1969) discussed three major premises of symbolic interactionism:

The first premise is that human beings act toward things on the basis of the meanings that people assign to the things. The second premise is that the meaning of such things originates from the social interaction that one has with other individuals. The third premise is that these meanings are synthesized by means of an interpretative process used by the person in dealing with the things he encounters. (p. 2)

Blumer’s first premise was that individuals are active and purposive, not passive in responding to stimuli from their environment. Blumer argued that people act purposefully and create plans based on the meaning that they have for objects. His second premise differentiates symbolic
interactionism from other approaches. Blumer believed that people derived meanings from objects:

If one declares that the given kinds of behavior are the result of the particular factors regarded as producing them, there is no need to concern oneself with the meaning of the thing toward which human beings act; one merely identifies the initiating factors and the resulting behavior. (p. 3)

This premise states that meanings are social products that arise during interactions. Inclusive in this second premise is that individuals give meaning to objects based upon the uses they have for those objects, which the individual comes to know through social interaction. Social objects include human-made objects, animals, other people, ourselves, perspectives, symbols, emotions, and ideas (Blumer 1969; Charon, 1998).

Blumer’s third premise encompasses the process by which individual’s make sense of social objects. Social interactions have the primary influence on individuals’ interpretation of meanings:

This process has two distinct steps. First, the actor indicates to himself the things toward which he is acting; he has to point out to himself the things that have meaning. Second, by virtue of this process of communicating with himself, interpretation becomes a matter of handling meanings. The actor selects, checks, suspends, regroups, and transforms the meanings in the light of the situation in which he is placed and the direction of his action. (p. 5)

In this process, the individual identifies objects that have meaning by communicating with himself through internal dialogue. The individual then makes sense of these meanings based upon the current situation.
Relationship of Symbolic Interactionism to This Study

This study examined teachers’ perceptions of the impact of action research on metacognitive growth. When teachers engaged in action research, they interpreted their experiences based on their interactions with students and their own thought processes. This study examined the meanings that teachers gave to their experiences while engaging in action research. In tandem with the framework of symbolic interactionism, this study analyzed teachers’ perspectives on the meanings they assigned to their metacognitive thought processes as they participated in action research, and the effect of participation in action research on their teaching performance.

These perceptions were best studied using qualitative methods, such as those suggested by symbolic interactionism. Qualitative methods allowed the researcher to gain insight into the personal thoughts of the participants by asking in-depth questions to elicit comments from the participants. Qualitative research allowed the researcher to study people in the situations in which they find themselves (Taylor & Bogdon, 1998, p.8). Such qualitative methods also allowed the researcher to obtain details about feelings, thought processes, and emotions that would have been difficult to obtain through quantitative research methods (Strauss & Corbin, 1998, p.11).

Qualitative studies can enhance our understanding of the development and growth of individuals’ self-regulatory strategies (Butler, 2002). A strength of investigating self-regulated learning strategies using a qualitative method is that the connection between the intervention and the outcome is explicitly documented, thereby increasing validity (Cresswell, 1998). Many researchers (Meyer & Turner, 2002; Perry 2002) who have conducted qualitative studies regarding self-regulated learning have noted that such methods advanced theoretical
understanding of instructional and classroom practices that support self-regulated learning (Butler, 2002). Such qualitative research, with its rich descriptions of instruction, enables practitioners to witness processes in context, which allows for naturalistic generalization from case to case (Butler, 2002; Lincoln & Guba, 1985; Merriam, 1998).

The ways in which symbolic interactionism guided this study is evident from the focus which this study placed on teachers’ interpretations and meanings. As the researcher was guiding the action research staff development course in which the teachers in this study were participating, the researcher was able to observe the teachers’ discussions with each other at staff development sessions. The researcher also had the opportunity to observe each of the teachers’ classrooms, the opportunity to talk individually with each of the teachers about their thoughts regarding the action research process, and the opportunity to review teachers’ own classroom data and reflective journals. During these observation and discussion times, the researcher was able to gain a more in-depth understanding of the motivating factors influencing the teachers’ actions and thought processes as they conducted the action research process. Concepts of importance to the participants were analyzed as the data from these sources were gathered. Such data provided rich information for the researcher to further understand the way that teachers’ interactions with their students and within themselves influenced their perceptions of the impact of action research on metacognitive development.

Conducting Study at Researcher’s Site

This researcher was aware of both the advantages and the disadvantages of conducting research at one’s own site. As such, the researcher was cognizant of the possible disadvantages and worked consciously to minimize them, and the researcher was able to consciously use the advantages to the benefit of the study. Taylor and Bogdan (1998) discussed some of the
advantages, such as the ease of gaining access to the site, the researcher having a role in the setting, the participants being at ease with the researcher, and the data being easily accessible. However, Taylor and Bogdan (1988) also cited that some disadvantages can exist when conducting research at one’s own site, primarily because novice researchers might take their own viewpoints for granted. Taylor and Bogdan cited the importance of being aware of one’s own perspective, and being honest about where one stands when reporting the research findings.

While participants may be more at ease with a researcher with whom they are acquainted, they could also possibly perceive the researcher as holding an elevated status or power, which could influence their participation and responses in the study (Husby, 2002). This researcher addressed the possibilities of the perceptions of a power differential by designing the class for staff development credit, providing course participants with a syllabus outlining their activities for the course, and informing the course participants that the work would not be evaluated. Throughout the study, the research participants appeared to be very comfortable and eager to share their true thoughts and experiences regarding action research.

Context of Study

The context of the study is provided in this section. The action research staff development course is described briefly. The demographic and background information regarding the site at which the course took place is provided, along with the information regarding the participants.

The Action Research Staff Development Course

The action research course was conducted on-site in an elementary school. The researcher led the course, which spanned a 12 week period. The group met four times at pivotal points in the action research process to introduce the action research process, to help the
participants determine the focus of their studies, to learn how to collect data, and finally, to share their results (Appendix B). Each of the participants scheduled a discussion time with the researcher to discuss each of their projects and their reflections regarding the action research process. Participants also maintained reflective journals regarding their studies, tracked the data regarding the progress of their projects, and submitted written reflections regarding their experience conducting action research.

The purpose of the first meeting was to introduce the seven participants to action research and assist them in determining the focus for their studies. The agenda for this meeting included discussion of the action research process, the benefits of action research, and an overview of the activities for the course. The researcher provided the course participants with written reviews of previous action research projects which had been completed by other teachers so that the participants could have a better understanding of the process. The group also reviewed an introductory chapter in the book, *The Action Research Guidebook*, by Richard Sagor. All participants of the course were provided with a copy of this book which was used as a reference and a guide throughout the course activities.

The teachers were interested in learning about the process of action research and found the examples which the researcher provided to them of previously conducted action research projects to be helpful. They reviewed several of the studies and discussed them in their small group settings. They began discussion regarding possible topics about which they might focus their own research projects.

The topic of the second class was that of assisting the teachers in finding a focus for their own studies. We discussed that a focus for their studies should be either performance related (something the students could do in the areas of cognitive, behavioral, or affective) and be a
process that would improve their teaching performance. We used *The Research Guidebook* as a guide to discuss the types of topics that would be beneficial, as the topics needed to focus on the teachers’ actions, demonstrate improved performance, and be an issue that mattered to the teacher.

We discussed the important role that journaling would play in identifying a focus, and the teachers were encouraged to journal for about 15 minutes a day for 10 consecutive days to help them to identify problems or concerns which they might encounter in their classrooms. They were encouraged to bring the completed journals to the third meeting.

The topic of the third class was to identify the specific problem upon which they wanted to focus their action research project and to discuss data gathering. The teachers worked in small groups and shared their journal entries. They asked each other leading questions derived from *The Action Research Handbook* to assist them in narrowing their focus. The teachers asked each other questions such as “What concerned you, pleased you, surprised you, or raised a question for you?” They were also asked if the topic would have an impact on an academic, behavioral, or affective outcome for students. The teachers also asked each other if they understood the issue or phenomenon to their satisfaction. The teachers then narrowed the focus for their topics based upon the criteria of the questions, and they selected final topics regarding issues about which they wanted to learn more.

During this third class, the researcher discussed data and methods of gathering data. The teachers reviewed data collection strategies from previously completed action research topics, and they were encouraged to create a bin in which they could place their collected data.

The fourth class focused on analyzing the data and the methods of reporting the data findings. Teachers shared their data collection with their small groups and answered questions
regarding their progress. The teachers brainstormed ways to report the data, and some teachers shared charts that they had used in the past to track student performance. The teachers were eager to share the progress that they had made, and they received positive feedback from their peers regarding their projects.

The researcher shared the format for the end-of-course projects, which was to be a written reflection regarding their projects and their thoughts while conducting action research. The teachers were encouraged to include connections to the literature, data collection and findings, reflections, and implications to their teaching. The teachers were also provided with a time frame in which to schedule a discussion time with researcher to reflect on their action research experience.

*Site*

The action research group was conducted in an elementary school in a suburb of a large city in the Southeastern United States. The school has approximately 900 students in grades K-5. Approximately 45 teachers were employed in grades K-5, and 8 teachers were employed for special education. The school also serves students with autism, and 8 certified teachers work with students in this program.

The school is located in an affluent upper middle-class suburb. The majority of parents are college educated and very involved in their children’s education. The PTA proudly reports a 100% parent and teacher membership annually. While less than 1% of the student body speaks English as a second language, over 15% of the student body is non-Caucasian.

The faculty experience and education is broad. Over 50% of the faculty members have master’s degrees, and the average length of experience for the faculty is 10 years. However, the specific years of experience range from 0 to 27 years. Two teachers hold specialist’s degrees, as
do the assistant principal and principal. Four teachers in the school have earned National Board Certifications.

The atmosphere of the school is one conducive to teacher learning. The current principal has led the school for 2 years, and he has encouraged the staff to engage in professional learning in a variety of ways. He encouraged an environment conducive to learning in several ways. He encouraged the teachers to participate in collaborative book studies for staff development credit. The principal was also conducted a collaborative book study with the leadership team regarding professional learning environments, and he based school decisions on the premises set forth by proponents of professional learning communities. He encouraged teachers to share their thoughts regarding school based decisions, and he had great respect for the teachers of the school. He provided needs assessment questionnaires to teachers regarding topics of interest or concern so that he could provide staff development options that would be most helpful to the needs of the staff.

As a result of the principal’s focus on professional learning, 40 of the 45 teachers voluntarily engaged in collaborative book studies during the year that the researcher conducted this study. Grade levels were collaborative meetings where classroom instruction and curriculum were discussed. Many teachers volunteered to attend additional training related to the curriculum, and returned to share and model the instruction with fellow teachers.

The professional learning atmosphere was also conducive to the researcher’s conducting of a professional learning course on action research. The principal was highly supportive of the researcher’s conducting of the course, and seven teachers volunteered to participate in the course. The principal referenced the course and the progress that the teachers were making often at faculty meetings as an example of the teachers’ furthering their professional learning. The
teachers were encouraged by the principal to share their progress in the action research class with the staff.

Participants

Action research can be applicable to all teachers, as teachers can choose their own topics of study based upon their individual current needs. The course was offered to all staff members, and invitations to participate in the class were extended at faculty meetings and via the school e-mail. Seven certified teachers from multiple grade levels chose to enroll in the class based upon their interest in the topic. They also earned a staff development credit for their participation in the course.

The seven teachers who volunteered to participate in the action research course which was led by the researcher were from various grade levels. Of the seven teachers, one was a kindergarten teacher, two were first grade teachers, one was a second grade teacher, one was a third grade teacher, one was a media specialist, and one was an adaptive art teacher for children with autism. The teachers had a variety of backgrounds and experience, too. The breakdown of education and experience of the teachers, along with their research topics, are as follows:

Table 3.1
Study Participants and Their Action Research Projects

<table>
<thead>
<tr>
<th>Teacher</th>
<th>Grade Taught</th>
<th>Experience</th>
<th>Education</th>
<th>Study Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Debbie</td>
<td>First Grade</td>
<td>10 years</td>
<td>Bachelor’s</td>
<td>Oral Reading Fluency</td>
</tr>
<tr>
<td>Martha</td>
<td>Adaptive Art</td>
<td>24 years</td>
<td>Bachelor’s</td>
<td>Classroom Environments for Students with Autism</td>
</tr>
</tbody>
</table>
Data Collection Procedures

Data collection was guided by the following questions:

1. What are teachers’ perceptions of their metacognitive growth during and after action research?

2. What impact did conducting action research have on later self-regulation of teaching performance independent of the action research?

Data for this study were gathered through observations of the participants’ classrooms, observations of the group interactions during the action research collaborative group meetings, interviews, reflective journals, and teachers’ written reflections on their studies. The interviews were audio-taped and transcribed for additional analysis and coding. The researcher also kept a notebook that included a reflective journal of interviews and data collection activities.

Qualitative Interviews

Intensive face-to-face interviews were the primary data source for the study. As a method of gaining insight into an “inter view” (Kvale, 1996), the interviews were conducted in an
effort to understand the knowledge that the individuals made between themselves and the world. Such qualitative interviews provided a special opportunity to gain insight into the teachers’ perceptions of the interplay between the activities on the outside world and the corresponding impact on the individual. Qualitative interviews were the preferred choice for this researcher, as this researcher was interested in the perceptions that teachers had as a result of their experiences with action research. In this study, the purpose of interviewing was to gain understanding of teachers’ perceptions of the impact of action research on their metacognitive growth. Each of the seven participants was initially interviewed at the end of the action research course, and each teacher participated in a follow-up interview which was conducted at the beginning of the following school year. The initial interviews commenced in May of 2007 and the follow-up interviews concluded in September of 2007. The initial interviews ranged in time from 35 minutes to one hour, with the average interview lasting about 45 minutes. The follow-up interviews ranged in time from 15 minutes to 45 minutes, with the average interview being 25 minutes. The first interviews were tape recorded and transcribed to ensure accuracy in data reporting (Bogdan & Biglen, 1982). The length of pages of the transcriptions for both interviews for each participant was approximately 14 double spaced pages.

The interviews were semi-structured to gain interpretative information from the participants. Kvale (1996) stated that “the very virtue of the qualitative interviews is their openness” (p. 84). Merriam (1998) encouraged researchers to use a list of questions only as a guide, thereby allowing the researcher to respond spontaneously to emerging issues or topics elicited during the interviews. The goal was to have the opportunity to make decisions, based on the researcher’s knowledge of the study topic, about methodological issues that arise during the different stages of interview investigation (Kvale, 1996). During initial interviews, the interviews
were semi-structured to allow the participants to respond openly regarding their thoughts of the action research process. The participants were encouraged to share their experiences conducting action research and what they believed was relevant to their experience. As conversations continued in both the initial interviews and the follow-up interviews, the researcher encouraged the teachers to share their self-talk regarding their topic of study and to elaborate on their perceived benefits. During these later interviews, the questions became more focused to help the researcher determine if data findings from earlier interviews were correctly categorized.

*Research Notebook*

A research notebook was kept to record all notes throughout the duration of the study. This notebook included all field notes, research notes, transcriptions, and methodological notes. A journal to summarize the activities of each interview or day of research was included in the notebook.

Such notes were invaluable when coding and searching for an emerging theory from the notes and interviews. The notes maintained by the researcher were used primarily for triangulation, in which the researcher was able ensure validity of the data. Through examining the notes regarding the observations of collaborative group sessions and teacher classrooms, the researcher could ensure the accuracy of teachers’ perceptions of the impact of action research. Data, including the graphs and charts that the teachers provided regarding the progress of their studies, as well as their own journals and reflections regarding their projects, assisted the researcher in understanding their perspectives and ensuring validity.
Data Analysis Procedures

Grounded theory is based on generating hypotheses from an examination of the data.

Grounded theory “is not just findings, but is rather an integrated set of conceptual hypotheses . . . It is just probability statements about the relationships between concepts” (Glaser, 1998, p. 3). This method examines the underlying processes of observed reality and reveals the nature of the processes being studied. Grounded theory “has its own constant verification through modifying by constant comparison. Grounded theory is the discovery of what is there and emerges. It is NOT invented” (Glaser, 1998, p. 4). One basic tenet that interests many of its followers is that of “all is data”; the researchers of this method are constantly looking at the data and formulating hypotheses based upon realities to figure out what they are doing and what is going on around them (Glaser, p. 8). Glaser also points out that grounded theory is practiced by many people as a way of going through life, looking at what is around them, making sense of the “data,” and acting upon them in a meaningful way to navigate through life. Interpretations are induced from constant comparison of data examination (Glaser, p. 12). This type of study is not a correlation type study, but rather a window, as it were, into what is going on in the process being studied.

Grounded theory is conducive to examining social or social psychological processes. Of great importance to the success of this method is the managing and analysis of data. Through coding procedures and constant comparative analysis, researchers develop an abstract theoretical framework to explain the emerging frameworks from the data. It is the “integration of categories into a theoretical framework that specifies causes, conditions, and consequences of the studied process” (Charmez, 2002, p. 677).

The types of coding employed by grounded theorists include open coding and selective or focused coding (Charmez, 2002). In open coding, data is labeled, separated, compiled, and
organized. Such codes may be simple, concrete and topical, general, or abstract and conceptual. This coding process is the foundation upon which the development of the analysis will be built. The codes create the categories and the explanation rather than the data being forced into codes (Charmez, 2002). The researcher is looking for what is going on in the data. For example, in “Identity Dilemmas of Chronically Ill Men,” Charmez (1994) identified categories for the ways in which men dealt with chronic illness. With coding, she was able to establish emerging categories, including “Awakening to Death,” “Accommodating to Uncertainty,” “Defining Illness and Disability,” and “Preserving the Self.” In focused coding, the researcher takes several codes identified in the open coding phases and places larger amounts of data into those codes. Such categories may come from a natural language of the participants and the researcher’s analytic interest (Charmez, 1994). This researcher primarily employed open coding by allowing the codes to create categories and explanations.

The continuous coding which originated from subsequent interviews did fit into most of the codes that originated during the open coding. However, several codes had to be re-examined when new data emerged from the subsequent interviews, and new codes were created to accommodate all of the findings from the data. For example, within the theme of “Effects”, the category of “Effects” had originally been “A new way of thinking”. From the data, it was clear that teachers were thinking differently regarding their teaching performance. However, as the researcher asked additional questions at subsequent interviews and gathered more data, this category split into two different categories, including “Metacognitive Self-Regulation” and “Empowerment”. It was clear that teachers did have a new way of thinking (Metacognitive self-regulation), but that new actions were subsequently resulting from this thinking. Teachers were
becoming empowered to act on their ideas and influence their teaching performance. Eventually, saturation was reached and no new categories emerged with the new data.

Criteria used to evaluate grounded theory include fit, work, relevance, and modifiability. Fit determines “if the concept adequately expresses the pattern in the data which it purports to conceptualize” (Glaser, 1998, p. 18). Fit is continually modified and improved by constant comparative analysis. This researcher provided for credibility of the grounded theory by using all of the relevant ideas expressed by teachers, and by continuing to use their comments to create categories into which the data fit until the categories were saturated. Several times new categories were created to fit the pattern of the data. For example, under the theme of “Adult Learning”, two sub-categories had emerged regarding the category of “Disorienting Dilemmas” from the original interviews. These included “Searching for a strategy” and “Lack of success from original strategy”. However, it became clear that teachers were internalizing feelings related to being worried, puzzled, or confused about not having a strategy to correct the problem. Therefore, the researcher created a new sub-category, that of “Interpersonal” to address teachers’ personal feelings which resulted from not having a strategy to correct their problems.

Workability looks to the concepts and the way they are related into the hypotheses. Do the concepts “sufficiently account for how the main concern of participants in a substantive area is resolved?” (Glaser, 1998, p. 18). This researcher did examine the incoming data and related the data to the hypothesis. As the hypothesis was supported highly by research literature, the data were indeed “workable” with the hypothesis. New data did emerge that were independent of the hypothesis, but the new data were still workable and highly supportive of the hypothesis. All reflections that teachers had regarding the action research process were used, and all fit into the four themes and the subsequent categories.
Relevance determines whether the research is important, and whether it captures the main concerns of the participants. Is it a “good grab?” The data from this study came directly from the thoughts and experiences of the teachers who conducted action research. They were open to share their thoughts, and their thoughts were relevant to the hypothesis and the topic of the study.

Modifiability determines whether the research could be modified by new data to which it could be compared. During this study, new data that emerged from the interviews did modify the existing categories. Examples of this were provided previously regarding the creation of new categories to address teachers’ interpersonal feelings regarding disorienting dilemmas under the theme of adult learning, and the empowerment that teachers experienced under the theme of “effects”. The new information was workable, and the new information helped to further categorize the existing data and to allow theory regarding teachers’ perceptions of metacognition to emerge.

**Constant Comparative Analysis**

A primary component of grounded theory is constant comparative analysis, in which the researcher compares the new pieces of data to previously collected data (Glaser, 1978). As new data are collected and analyzed, new categories emerge. This method places an emphasis on the ever developing generation of theory (Glaser, 1996). The management and analysis of data is fundamental to the success of this method. Through coding procedures and constant comparative analysis, researchers develop an abstract theoretical framework to explain the data. It is the “integration of categories into a theoretical framework that specifies causes, conditions, and consequences of the studied process” (Charmez, 2002, p. 677).
Stages of Constant Comparative Analysis

The variation of constant comparative analysis developed by Glaser and Strauss (1967) involves formulating, testing, and redeveloping propositions until theory is generated from the data. Glaser and Strauss (1967) further elaborated on the stages of constant comparative analysis: “The method of constant comparative analysis consists of four overlapping stages: (a) comparing incidents applicable to each category, (b) integrating categories and their properties, (c) delimiting the theory, and (d) writing the theory” (p.105). During such analysis, coding and data collection are done concurrently. Categories begin to emerge through transcript analysis during the first interviews. The goal is to reach theoretical saturation, which is when no new categories or properties are observed in the data (Glaser, 1978).

Stage One: Comparing Incidents

The researcher interviewed the first round of teachers, transcribed the interviews, and compared incidents. The researcher conducted a line-by-line analysis of the data, and made corresponding notations regarding incidents in the margins of hard copy transcripts. Glaser and Strauss (1967) describe incidents as being small units of data that explain what was happening in the research setting. As the researcher noted groups of similar incidents, she coded the incidents. The researcher wrote all of the relevant comments onto note cards so that similar data could begin to be placed into preliminary categories.

As the researcher continued to transcribe interviews and code the data, the researcher began to identify preliminary categories as she noticed similar incidents which were recurrent in the data. As new data came in, the researcher compared the incidents were compared with previous incidents in all of the preliminary categories. These preliminary categories provided a basis for the researchers’ asking more specific questions in subsequent and follow-up interviews.
For example, the researcher began to see that teachers were not only thinking differently as a result of conducting action research, but that they were acting on these thoughts. Therefore, the researcher asked more in-depth questions regarding these resulting actions during subsequent interviews.

The researcher continued to code incidents and place them into categories. The researcher had to define the meanings of the preliminary categories as the data came in. Such review of the data each time it was placed into a preliminary category ensured that the researcher was defining categories with true meanings. When incidents were coded which did not fit into the existing data, either existing preliminary categories were split to accommodate the new information, or new preliminary categories were created. An example of this was previously provided regarding a category which emerged under the theme of “adult learning” to address the interpersonal feelings that teachers had regarding their inability to solve the problem. This new category was entitled “interpersonal”.

The researcher used the process of writing memos as a method to record thoughts and similarities noticed among the incidents. Such memos also helped the researcher analyze the incidents, notice similarities, broaden categories, or re-classify categories. The memos themselves were like data (Charmez, 1994), as they were combined with the teacher comments and sorted during the analysis process. Glaser (1998) states that

memos are the theorizing write-up of ideas about substantive codes and their theoretically coded relationships as they emerge during coding, collecting and analyzing the data, and during memoing…memos capture, track, and preserve conceptual ideas (p. 177-180).
Stage Two: Integrating Categories and Their Properties

The researcher continued to solidify the preliminary categories as the data continued to accumulate. These properties began to emerge through comparative analysis of the categories (Glaser & Straus, 1967). The researcher had placed all of the teacher comments onto index cards and created categories for each of the grouped sets. Several categories were highly supportive of the researcher’s hypothesis. Even among these categories that were supported by the researcher’s hypothesis, new sub-categories emerged which were evident from the data gathered during the interviews. Two entirely new categories, those of the self-verbalization and empowerment effects from conducting action research, emerged from the data. These new categories complimented the researcher’s hypothesis.

Such new findings prompted the researcher to ask more specific questions during subsequent interviews in order to refine categories (Bogdan & Biklen, 1982; Strauss & Corbin, 1998). Such interviews helped to validate the findings and minimize possible distortions on the part of the researcher (Goetz & LeCompte, 1984). The researcher continued to conduct constant comparison of the data until no additional categories emerged and theoretical saturation was reached (Glaser, 1998).

Deciding which data to collect next is part of the process of theoretical sampling, another activity involved when integrating categories and their properties, is defined by Glaser and Strauss (1967, p. 45) as, “the process of data collection for generating theory whereby the analyst jointly collects, codes, and analyzes his data and decides what data to collect next and where to find them, in order to develop his theory as it emerges.” By asking more defining questions in subsequent interviews, the researcher was able to further develop the theory as it was emerging.
Stage Three: Delimiting the Theory

During this stage, the researcher formulated a simple theory that was based on the information gathered from the data and the categories. In this stage of delimiting, similar or overlapping categories were combined, and categories which did not fit within the confines of the emerging theory were discarded (Glaser, 1994). This process helped to identify the theories and categories more clearly.

Once the researcher had streamlined the categories through delimiting the theory, she conducted the follow-up interviews with each of the participants. The information from these follow-up interviews helped reinforce the researcher’s ideas and provided additional information about the proposed theories. These follow-up interviews provided an opportunity for teachers to validate the research findings and to provide additional insights which were supportive of the categories.

During this stage, the researcher had identified the feelings of empowerment that teachers were experiencing after conducting the action research projects. However, the researcher did not have enough information from the original interviews to saturate the categories within this “Effects” category to adequately represent the meanings that empowerment had to the teachers. Some teachers had shared information during the initial interviews regarding new confidence regarding their teaching, but others had not elaborated on it. Therefore, during the subsequent interviews, the researcher asked teachers more in-depth questions about their perceptions of empowerment. It was during these interviews that it became clear that the teachers were self-verbalizing regarding self-regulation, and that this verbalization was powerful in empowering them to act on their ideas and influence their teaching. Through such delimiting of theory, the
categories under the theme of “Effects” were clearly defined and the categories of self-regulation and empowerment were saturated.

Stage Four: Writing the Theory (Framework)

The previous three stages of constant comparative analysis provided the foundation for the final stage, that of writing the theory. In this stage, the researcher was able to integrate the information from the coded data and the results of the emerging theory, the researcher was able to generate a new framework about the impact of action research on teachers’ metacognitive development. This new framework emerged when the researcher reviewed the memos and the coded data in each of the categories. Connections among the categories emerged from this analysis, and several new connections about teachers’ experiences when conducting action research emerged.

The first new connection was that teachers do perceive metacognitive benefits from conducting action research. This connection was demonstrated when teachers shared thoughts which were supportive of the adult learning, experiential learning, and reflection components of metacognition. The next new connection was that after experiencing this initial metacognitive development from conducting action research, teachers’ self-verbalization regarding their self-regulation changed. The third new connection among the categories of this framework is that because of this new self-regulation, teachers are empowered to act on their ideas and influence their teaching performance.

Components of Constant Comparative Analysis

The essential components of constant comparative analysis are discussed in the following section. These components consist of theoretical sensitivity, theoretical sampling, theoretical saturation, and theoretical pacing. Following the discussion of each component of constant
comparative analysis, the methods by which these essential components were included in this study are discussed.

_Theoretical Sensitivity_

Theoretical sensitivity is the ability of the researcher to determine the information from the interview and data analysis that is or is not relevant to the research, and to code and analyze the data so that it gives meaning to the researcher. “Data analysis is the process of systematically searching and arranging the interview transcripts, fieldnotes, and other materials that you accumulate to increase your own understanding of them and to enable you to present what you have discovered to others” (Bogdan & Biklen, 1982, p. 145). Strauss & Corbin (1998) state that sensitivity usually grows during the research and aids the researcher in knowing what concepts to look for and where such indicators might be located.

Theoretical sensitivity occurred during this study when the researcher examined the transcriptions from the interviews. Some comments described the action research project itself, but did not elaborate directly on the reflections and thoughts which the participants had about the process of action research. Descriptions of the action research process were helpful to understanding the context in which the teachers’ learning occurred, as such comments demonstrated progress from the beginning to the end of the study, but they did not directly support teachers’ thoughts about the process. All comments describing the thoughts which teachers had while they conducted action research were relevant to the research and were placed into categories. The researcher’s understanding of the literature and her own reflections helped her recognize connections in the data that were relevant to the study.
**Theoretical Sampling**

Theoretical sampling occurs when the researcher develops concepts when comparing new data to data that has already been collected (Glaser & Strauss, 1967). The researcher continues to make comparisons between categories which have emerged and the most recent data. This researcher continued to review the data from the interviews, comparing it to previously gathered and analyzed data, which will moved the researcher toward the development of a framework. Glaser (1998) stated that “the data must control the emerging theory” (p. 18).

**Theoretical Saturation**

Theoretical saturation occurs when a category is complete, and no further sampling identifies a new category or provides additional insight to an existing category. Theoretical saturation is also based on the integration and the density of the theory and the sensitivity of the researcher (Glaser, 1978). Strauss & Corbin (1998) state that saturation occurs when no new or relevant data emerge regarding a category, the categories are well developed, and the relationships among the categories are secure and valid. This researcher determined that theoretical saturation has been reached when no more data emerged to create new categories. All new data fit into the previously formed categories.

**Theoretical Pacing**

Theoretical pacing, the final component of constant comparative analysis, refers to the pace at which the research study proceeds. The generation of grounded theory cannot be rushed or forced, and time must be allowed for theories to emerge. The two stages of theoretical pacing are input and saturation (Glaser, 1978). Input refers to collecting and analyzing data, and writing memos. Saturation occurs when all ideas have emerged from the data and new data does not
provide new insights (Glaser, 1978). This researcher ensured that the analysis of the data was not rushed or forced, and proceeded as the data shaped the emergence of theory.

Reliability and Validity

Reliability refers to the consistency of the research findings (Kvale, 1996) and has been achieved when two researchers, working independently, are able to reach the same conclusions regarding the same setting or subject. Reliability is ensured in qualitative studies through the systematic ways in which data is coded and placed into categories, such as is done using the constant comparative method (Taylor & Bogdan, 1998). An impetus for outlining clear, concise methods of data collection and analysis procedures exists when conducting grounded theory research, as such a practice provides the best assurance that future researchers, working independently, could report similar conclusions.

This researcher closely followed the parameters of constant comparative analysis, and thus believes that an independent researcher would reach similar conclusions regarding teachers’ perceptions of the benefits of action research on their metacognitive development. The data was examined systematically and placed into categories which were supportive of all of the data. The data gathering continued until the categories were saturated, and yielded no new information.

Validity refers primarily to the truth, knowledge, and meaningfulness of the study, ensuring that a close fit exists between the data and what people actually say and do. It is “the truth and correctness of a statement. A valid argument is sound, well-grounded, justifiable, strong, and convincing” (Kvale, 1996, p. 236). Goertz and LeCompte (1984) described the process of ensuring validity as triangulation, the practice of gathering data from multiple sources.

This researcher ensured validity through triangulation. Data were gathered from multiple sources, including observations of each of the teacher’s classes, observations of the group
interactions during the action research class, written reflections by the teachers regarding their action research experiences, and initial and follow-up interviews. All of these data, while collected separately, were supportive of the findings.

Control for Bias

When conducting grounded theory, it is of high importance to ensure that the researcher is not slanting the findings of the data based upon preconceived ideas or experiences. Taylor and Bogdan (1998, p. 180) stated that “All observations are filtered through the researcher’s selective lens.” By staying close to the data and carefully analyzing, coding, and memoing, the researcher was able to correct for bias. The researcher was aware of subjectivities that might exist based upon past experiences, and ensured throughout the process of constant comparative analysis that such possible bias did not interfere with the coding and categorizing procedures.

Subjectivity Statement

The researcher’s interest in this topic stemmed from her teaching background. While working on an undergraduate degree in elementary education, the researcher took a class in teaching exceptional children. Teaching strategies for teaching students with exceptionalities was especially interesting to the researcher, who subsequently pursued two master’s level certifications in teaching students with learning disabilities as well as students who are gifted and talented.

Metacognitive strategies for enhancing the learning process for both exceptionalities were emphasized in both programs. The researcher’s current interest in instructional leadership prompted her to study the ways that metacognitive strategies could be used to enhance teachers’ metacognitive growth regarding teaching practices. As a result, the researcher was alert to
sensitivities she could have regarding the perspectives of teachers who work with students with exceptionalities, their teaching styles, or their own reflective practices.

Other factors, such as personal history and cultural history, were issues of which the researcher was aware when conducting these interviews, for the researcher wanted to gain insight from a variety of backgrounds. Diversity opened the door to gaining new and additional insights that were different from those of people with whom the researcher had much in common. Teachers from various teaching backgrounds and years of experience were able to offer valuable reflections.

The researcher also remained aware of personal thoughts regarding the study, for the researcher entered this study with the assumption that teachers’ involvement in action research would have a positive impact on their metacognitive development. The researcher was very open to the information provided by the teachers and was careful not to inadvertently encourage answers that would parallel the researcher’s bias regarding the topic of study. The researcher was open and welcoming to new thoughts and ideas that emerged from the interviews and data analysis. As a result of this openness, subcategories emerged which were new connections to the researcher, and new results emerged regarding the benefits of action research.

Summary

This chapter described the context and the methodology of the study. The study used the methodological framework of grounded theory and the theoretical framework of symbolic interactionism. Through constant comparative analysis, connections among data emerged and were either strengthened or refigured as data continued to be gathered. The researcher continued to gather data until the categories were saturated. This chapter also discussed the steps the researcher took to ensure reliability, validity, and control of bias.
CHAPTER 4

FINDINGS

Introduction

The purpose of this study was to identify teachers’ perceptions of the impact of action research on their metacognitive growth. This research was conducted to establish a theory grounded in the data that described teachers’ perceptions of the potential metacognitive benefits of action research. This research also looked at the meanings that these metacognitive experiences had for teachers who had conducted action research.

This chapter presents the findings from this research by providing direct quotes from the participants. Each individual participant is introduced in the first section. A summary of each participant’s action research topic is presented, along with each participant’s perceptions of the impact of action research on her thinking about teaching and her perceptions of metacognitive growth. The key points in the data will be highlighted from each individual’s point of view. In the second section, the main categories and common themes are presented. These categories include adult learning, experiential learning, reflection, and effects. These are highlighted so that the impact of action research on teachers’ perceptions of metacognitive growth can be showcased.

The data demonstrate that the initial metacognitive activities of adult learning, experiential learning, and reflection, which are stimulated by the action research process, provide a further benefit: teachers experience increases in metacognitive self-verbalization/self-regulation and empowerment which extend beyond their initial action
research project (See Table 4.1 and Figure 5.1). The data indicate that all teachers experienced this increase in metacognitive self-verbalization of self-regulation, and this self-regulation further empowered many of the teachers either through an increase in confidence to act on their ideas or an increase in confidence about teaching performance. Teachers reported feelings of validation about their teaching abilities and that they had a new way of thinking that they could use to help them with their teaching abilities or problem solving in the future.

Participants

All participants in this study took part in a 12 week action research study group that was conducted by the researcher. The action research group was conducted in an elementary school in a suburb of a large city in the Southeastern United States. The class was offered to all staff members of the school; therefore, the individuals who chose to enroll in the class did so because of their own interest in the topic. The seven who did participate earned a staff development credit for their participation in the course.

The group met four times at pivotal points in the action research process. During these meetings, the researcher introduced the action research process, assisted the participants in determining the focus of their studies, and discussed ways to collect data. During the final meeting, the participants shared their experiences and the results of their studies (Appendix B). Each of the participants scheduled an individual discussion time with the researcher/course leader to discuss each of their projects and their reflections regarding the action research process.

Each participant is introduced in this section, along with the grade level the participant was teaching at the time of the study, the participant’s highest educational level, and her years of teaching experience. Following each teacher’s background information is a description of the
topic about which the action research project was conducted. Individual experiences and
thoughts that each teacher had both before and after conducting the action research project will
also be highlighted.

Debbie

Debbie has taught several primary grades, including K, 1, and 2. She was teaching first
grade at the time the study was conducted. She has taught elementary school for 10 years, and
she has a bachelor’s degree.

Debbie had been involved in a collaborative group study regarding reading fluency.
During our action research class, she decided to extend new strategies about which she learned in
the book study. She selected a student in her class that was having difficulty reading, but did not
have difficulties in other academic areas. Debbie decided to track the child’s fluency and
displayed the frequently used words in succession on her computer screen. She was able to
speed up the process of the words being displayed as the student’s fluency improved. She also
worked with the child individually and had a reading buddy work with the child to provide the
child more opportunities to read orally. She tracked the child’s fluency three times during the
study. As a result of the interventions, the child’s fluency increased from 27 words per minute to
73 words per minute.

This was Debbie’s first experience with action research, and she found it to be a positive
experience. Prior to implementing action research, Debbie said that she was worried that the
child might have a learning problem. Debbie was “confused”, as this particular reading deficit
was one she hadn’t seen before. She said she “was worried”, and wondered “what can I do to
help?” After participating in the action research, Debbie stated that she was “very pleased with
the progress the student made.” Debbie said that both she and the student were “more confident.”
Debbie stated that she would likely use the action research process again, saying:

Once you’ve learned to ride a bike, you get back on the bike because you know it worked, it’s tested, and you’ve learned how to do it. I’m a visual learner, but once I’ve put it into action it’s much easier the next time. I know that every child is different, and what works for one might not work for another. I am [now] more apt to get on the problem immediately and get it done. Focus in on the problem.

*Martha*

At the time of the study, Martha was an adaptive art specialist for students in grades K-5 who had autism. Martha has a bachelor’s degree, and has taught art to both general education and autistic children for 24 years.

Martha was participating in a collaborative study group that was reviewing a book regarding strategies for promoting learning in students with autism. She decided to use some of the strategies about which she read in her study group with her own students. The focus of her action research project was to try to arrange the environment so that it was best suited for students with autism. As she had to share a classroom with another teacher, her focus was to minimize classroom distractions that often divert the attention of children with autism. She was able to implement several strategies for minimizing distractions, such as placing covers on bookshelves, moving the television and computer monitor out of view, and placing the student tables in a circle so that the students were more apt to make eye contact with her. A couple of other strategies included using other light sources than the florescent lights, and using panels to minimize distractions in other areas of the room.

Through the course of the action research project, Martha’s personal reflections went
from ones of frustration and not knowing what to do to those of “being empowered” and “more aware” of her students’ needs. Other words that she used to describe her thoughts after participating in action research included “confident, hopeful, and successful. I knew that if I worked on this, I could solve the problem.” Martha described other benefits regarding her experience with action research:

Action research made me pinpoint areas, especially in my classroom, that could really have an impact on this distractibility...Through the process of working on our daily journals, action research did make me realize that there were certain things that I did have control over. Action research really showed me the direction and had me plan in writing and decide what I would do if I had the opportunity...You can collect data and observe and journal, then look back at your notes and its down there in black and white and you can analyze where you were and how far you’ve come...If there is something really troubling me, I know what to do about it myself.

Indeed, a recent visit to Martha’s room at the beginning of the school year that followed the action research class was a refreshing experience. As a result of her research and the data she gathered during her action research study, she approached the school principal at the end of the school year and asked if she could have her own classroom, citing the importance of having a distraction free environment for her children. As she had professional literature and personal data to validate her need, she was provided with her own room for this current year. Within this new classroom, Martha has been able to fully design a classroom to meet the needs of the autistic child, which are the very designs about which she learned during last year’s action research activities. She had movable dividers set up throughout the room, a reward center, and lighting
controlled. Most rewarding was to see Martha’s beaming and confident face, excited to share the implementations and the corresponding benefits that both she and her students derived from the improvements. She definitely appeared to be “empowered” to have the confidence to act on her ideas versus her previous disposition of being overwhelmed and frustrated.

Paula

Paula was a media specialist at the time of the study, as she has been for the past 11 years. She has a master’s degree, and she also taught elementary grades for 12 years prior to being a media specialist.

The focus of her action research project was to identify and implement strategies to help calm and focus a nervous and compulsive child who tended to be disruptive when in the media center and when participating in media center classes. Previous attempts to calm and refocus the child had been unsuccessful, and the child had displayed similar behaviors in his classroom settings. His classroom teacher had not identified a successful strategy to refocus and calm the child. Paula initially attempted to talk to the child and reason with him, but this was not successful, as the child would either shrug his shoulders or nervously change the subject.

During our action research class, Paula focused on literature about children who are obsessive and compulsive in an effort to understand the child better. She focused on his behaviors more closely, and she tracked his anxious and disruptive behaviors. She noted that he wanted to please, but that even he realized that he had some issues with which he didn’t know how to deal. She changed her approach when communicating with him from being more confrontational to being more friendly and helpful. She would reserve a magazine that he wanted when it arrived so that he could look at it, and she took an interest in him. He eventually did warm up to her, also. He responded by helping fix the magazine rack, and asking her
questions to get to know her better. His obsessive and compulsive behaviors diminished as he received the extra attention and became more comfortable with Paula. He was calmer on his visits to the media center.

Prior to the action research class, Paula felt “frustrated” and said that “no matter what I tried it wasn’t working”. While Paula notes that she may be the one who has changed more than the student, she does feel that she has learned improved methods for approaching and working with students who are compulsive, and she now has a greater understanding and greater appreciation for such students. When confronted with similar situations in the future, Martha believes she will have helpful skills for communicating with such students and bringing out the best in them. Among the benefits of action research, Paula commented:

Action research [is beneficial] because it is right before your eyes and you are watching it develop rather than reading about it or watching about it or studying about it….I think this process made me review [my teaching] in a different way and track progress in a different way so that I can actually see the data…Action research made me actually look at the progress the child was making and the way I was adapting to help him, whereas had I not been putting it down in an action research format, I probably would not have seen some of the progress and seen some of the key things that made progress happen. It was just a way of formalizing and writing down what I maybe would have just thought “maybe I’ll try this, or I’ll try this.” Action research brought it together in a more cohesive way…When you are done you see. “I’ve learned a lot from this.”
Bridget

Bridget was a first grade teacher at the time of the study. She has a master’s degree, and she has been an elementary school teacher for 12 years. A focus of her past studies has been the developmental progress of children, and the importance of students’ developmental readiness as a prerequisite to reading, math, and social skills.

Bridget had been participating in a collaborative study group that was reading a book about improving the reading fluency of beginning readers. She wanted to apply some of the strategies from that book with a student in her class who was struggling with oral reading fluency. She tried a strategy that encouraged the teacher (or assistant) to read individually with the child 10 minutes per day, and monitor the child’s progress on a given passage. In this strategy, the teacher does not wait for the child to figure out words, but quickly provides the missing word so the child can continue on and focus on fluency. Bridget noted that the student’s progress was dramatic, improving from 27 words per minute at the beginning of the study to 48 words per minute at the end of the study, which was conducted over a three month period of time.

This was the first action research project that Bridget conducted, and her experience was positive. Prior to conducting the action research, Bridget “had a lot of concerns” and “was quite unsure on what to zero in on.” She said, “The action research really helped me because it caused me to zero in on one thing and see if it helped.” She also felt “pleased and encouraged.” Further citing the benefits of action research, she said:

I have always tended to analyze things, but now I realize that it’s not enough to mull it over in your head, you must have a way to record it and find out the results, and to evaluate…I can’t think of an instance when I wouldn’t use it…it
Beverly was teaching third grade at the time of the study. She has a bachelor’s degree, and has taught grades 2 and 3 for 8 years.

Beverly was participating in a collaborative study class which was focusing on ways to increase reading fluency in beginning readers, and she wanted to apply some strategies that she learned from that study group to a student who was struggling with oral reading fluency. The student was reading at a rate of 48 words per minute at the beginning of the study. Beverly noticed that the child’s confidence had diminished from the beginning of the year, when the child frequently raised her hand to participate. After a couple of months, the student became increasingly aware of her oral reading deficit and discontinued her oral participation.

The strategy that Beverly implemented was to work with the student individually and conduct pre-reading strategies such as previewing the title, author, pictures, and vocabulary. The
teacher would ask the child questions to help the child forecast possible story events.

Additionally, the teacher provided the student with a plastic strip so the child could keep track of her place in the passage as she was reading. The teacher shared the daily progress the student was making as a result of the new strategies, so the student was able to see her progress and regain some of the confidence she had lost. The number of inaccurate words made by the student decreased from 6 words to 1 word within a passage, and the student’s fluency increased from 48 words per minute to 94 words per minute.

In Beverly’s initial action research, she noted that she went from feeling “puzzled and confused” and said “I didn’t know I would have a strategy or would be able to implement it in a way that would help her” to having a sense of “I can help this child, I’m not going to get bent out of shape over it, but I can actually do something about it.” She added:

I feel confident. I can do it again next time [I have a problem in the classroom]. Next year I will probably have several students who will need some interventions. Now I know that even though it may be tough in the beginning, I know we are going to get through it. I will be more confident doing it next time. Maybe I will expand my interventions. You build on what you have learned.

*Amanda*

Amanda was teaching kindergarten at the time of this study. This is Amanda’s first year teaching kindergarten. She had taught second grade for 11 years prior to her recent move to kindergarten. Amanda holds a master’s degree in elementary education.

For her action research project, she chose to focus on improving instruction for a student who was very bright but was appearing to lose his enthusiasm for learning as he was not being
sufficiently challenged. She conducted a survey with the student to find his level of satisfaction with school and she gave him another survey to identify more of his interests. She also noted that he was very bored with math, as he had mastered the concepts very early. She thought the child was capable of second grade math.

The results of the surveys showed that the child thought most of the things that he participated in were satisfactory, but he was not “excited” about anything he was learning. The teacher provided the student with a questionnaire to find out more about his interests. They identified a topic about which he wanted to learn more. The teacher encouraged the student to check out books regarding a topic of his own interest, and the student prepared a presentation about his topic for the class. The teacher also obtained additional challenging math activities that correlated to the current math objectives about which the class was learning.

The teacher did see a change in the child’s affect as a result of his participation in more challenging activities. The student enjoyed working on the project and sharing it with the class. He also liked working on the second grade math sheets. The teacher said she learned a lot about being sensitive to the needs of gifted students, and that she had learned strategies for working with them that she would use in future similar situations. She went from feeling “sad, unsure, and questioning” to “pleased and having more of a sense of accomplishment.” She reflected on the benefits of her action research project:

Doing this systematically was good because I think doing the journal helped me be reflective, which helped me think about things in my classroom that I otherwise might think about but not do anything about. But when it is written down on paper, I could really focus more on problems…Your are able to make
[action research] meaningful to whatever it is that [the students] are doing. It is very meaningful if it is personal to what you are doing in the classroom.

Peggy

Peggy was teaching third grade at the time of the study, and she has taught grades 3-5 for 20 years. She holds a bachelor’s degree in elementary education.

Peggy wanted to focus her action research project on finding a strategy to increase the attentive behavior of her high ability math students. She felt that these students had difficulty maintaining their attention, which correspondingly lowered their rate of progress. She wanted to spend less time redirecting students’ behavior and more time teaching the learning objectives.

She devised a system in which she met with students once per week on an individual basis. During these meetings she reviewed each student’s progress and provided each student with achievement targets. Such targets included reducing the number of times she had to redirect the student, the student being independently engaged during the class period, and most importantly, each student participating in self-monitoring his own attentiveness during the class period. She clearly stated the positive reinforcements, which included a merit system with rewards, a behavior chart with built-in bonuses, and a grade reflecting attentiveness. She also identified the consequences for undesirable behavior. A disruptive student received a note on his or her weekly chart, received no reward for the given day, and his or her “attentiveness” grade was lowered.

The implemented strategies did improve the students’ time on task, and the teacher’s average “redirections” per math class went down from 15 per class to about 4. She was able to spend much more time focused on the instruction than on the redirection of the student behavior. Reflecting on the benefits of action research, she said:
[Action research] was more a beginning. It showed me that my being aware is not enough, that they need to be aware. It made me more tolerant and positive toward finding a solution, more willing and hopeful that there are other options. Through doing action research it opened up that there were other solutions. I could see things in a different light.

In summary, all seven participants shared revelations about their abilities, their self-concepts, and their ability to self-regulate by more effective planning, monitoring, or regulating as a result of the activities involved in action research. Additionally, the participants cited feelings of empowerment as a result of having participated in action research. This empowerment increased their confidence to act upon their ideas and to influence their teaching independent of the original action research project.

**Common Themes and Categories**

Following intensive, ongoing data analysis, four main themes emerged from the data as significant to teachers’ perceptions of the impact of action research on metacognitive development: adult learning, experiential learning, reflection, and effects. According to this study, teachers perceived benefits to their metacognitive development concomitant their participation in action research, and these benefits emanated from processes that linked action research and metacognition: adult learning, experiential learning, and reflection.

Within the 4 main themes, 10 categories were commonly discussed by the participants as being important to understanding their perceptions of the metacognitive benefits of action research. Figure 4.1 provides the reader with an overview of the themes and categories. In the following sections, each of the themes and categories will be discussed thoroughly.
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Figure 4.1

Common Themes of Teachers’ Perceptions of the Impact of Action Research on Metacognitive Development.
Theme 1: Adult Learning

The participants in this study cited many benefits of conducting action research which were supportive of previous research regarding the ways that adults learn best. The teachers shared that they were experiencing confusion, frustration, and even negative self-concepts related to their inability to solve the problems about which they conducted their action research projects. Such disorienting dilemmas are frequently precursors to adults’ transformational learning. Further, the teachers shared thoughts about their satisfaction with being able to select their own topics, and that they had an increased sense of ownership and excitement for learning because of their interest in this personal selection. Such interest in learning about topics of interest to oneself is a key foundation of adult learning. All teachers reported that both this disorienting dilemma and the benefits from being able to select their own topics were fundamental to the success of their action research experiences.

Adult Learning -Category One: Disorienting Dilemma

Many of the teachers noted feelings of inadequacy regarding their teaching abilities prior to their engagement in action research. Many had tried strategies but did not know what to do after the initial strategies were not successful. Prior to engaging in action research, all of the teachers noted a type of a disorienting dilemma emanating from their inability to solve the problem. While the disorienting dilemma originated with the problem in the classroom, some teachers reported negative feelings about the failure of the initial intervention strategies that they had tried. Others reported frustrations from simply not knowing what other options/strategies were available. Some took this frustration further and allowed the problem to affect them intrapersonally, reporting negative self-concepts resulting from their inability to solve the problem.
Failure of initial intervention strategies

Bridget, a first grade teacher, described the negative feelings associated with the failure of the initial interventions that she had been trying with a student who was struggling with reading. Bridget says:

Before action research, I felt frustrated because I had been trying things but they hadn’t worked. I was frustrated and searching for a way. Concerned…I had been keeping this little girl after school and working with her. I was juggling a lot of things, and because of that, I was trying a lot of different things.

Paula, a media specialist, cites similar concerns related to the lack of success with her initial interventions when trying to mediate the behaviors of a compulsive obsessive child:

I was frustrated because no matter what I tried with this child, it wasn’t working. I didn’t know what to do with the child. His other teachers didn’t know what to do with him.

Searching for a strategy

Some teachers reported disorienting thoughts or feelings related to a general overall loss of what to do. Bridget continued discussing her thoughts about working with the first grade student who was struggling with reading:

I was quite unsure on what to zero in on. Should I zero in on her sight words, or should I zero in on this or that?…I was searching for a way. Concerned.

Martha, when speaking of her difficulties maintaining the attention of her students with autism stated:
I had a sense of I could do more and didn’t know what to do. They weren’t with me, they weren’t focusing, they were somewhere else the whole time.

Debbie mentioned similar concerns when she spoke of a first grade student who had difficulties with reading fluency:

I was worried, what can I do to help? I felt confused. I wondered if the student had learning problems.

Beverly, a second grade teacher focusing on a student with reading difficulties, concurred:

I was puzzled, confused. I didn’t know if I would have that strategy [that could help the student] or that I could implement it in a way that would help her…I was skeptical because I didn’t know what one strategy that I would be able to come up with that would help her. I didn’t know if I would have that strategy or that I could implement it in a way that would help her.

And Peggy, a third grade teacher concerned with the attentiveness of her bright math students said that she, too, felt that she was “searching”.

Negative self-concepts related to the problem

Some teachers reported negative feelings that appeared to go beyond confusion with the problem, and actually reported negative self-concepts as a result of not being able to solve the problem. Martha, the art teacher of the children with autism, spoke of such feelings and thoughts:
It felt like you are failing somewhere. Sometimes I feel like I didn’t accomplish anything the whole time. You feel like ‘What can you do?’…I felt frustrated, a sense of failure.

Beverly, a third grade teacher who was unsure as to how to meet the needs of a child who had difficulty with oral reading fluency, shared similar self-deprecating thoughts:

I felt like I couldn’t do it on my own. Like I couldn’t pull it off.

Amanda, a kindergarten teacher, shared self-thoughts that were also indicative of the personal toll that can originate from not finding a solution. The problem that she faced was helping a bright kindergarten student continue to be challenged to his potential and enjoy school:

I was questioning, wondering what I’ve not done in years past.

Dissatisfied that the child was feeling bad. I felt sad, unsure of what to do. Regretful that this kind of situation happens.

Adult Learning- Category Two: Benefits of selecting own topic of study

Many teachers expressed satisfaction and an increased desire to learn because they were selecting topics to study that were of interest to them.

Selecting a topic of interest is at the foundation of action research.

Sense of ownership

Several teachers cited the satisfaction that they experienced being able to select their own topics versus having the topic of study chosen for them. Such satisfaction is shared by Paula, a media specialist, who selected the topic of her study, which was how to best relate to an obsessive
compulsive child who visited the media center frequently and caused disruptions:

In past classes, I was given a topic to focus on that was totally unrelated to anything I might be interested in. I remember walking around the building during the break in tears because it was so frustrating, non-challenging, not interesting. There was no interest at all, we were not connected. A better approach definitely is to do something you are interested in.

Several other teachers concurred with Paula’s thoughts. Beverly, a third grade teacher who was concerned with a students’ oral reading difficulties, said, “It really helped me to pick my own topic.” And Bridget, a first grade teacher also concerned with a student with reading difficulties, said:

With action research you have pinpointed what is important to you and you are researching to find what is important to you. Time is more targeted.

Amanda, a kindergarten teacher who learned to modify her instruction to meet the needs of a gifted youth in her class, said:

Picking the thing that bothers you the most or the thing that you want to from your classroom is great, very beneficial…If someone had picked my topic for me it would not have been as important to me. So it was nice to have a choice.

Peggy, a third grade teacher who was conducting action research to encourage bright math students to maintain their attention on the math lessons said, “I was
more connected and invested in action research because I was doing charts and graphs for myself because I chose to do it.”

*Enthusiasm for learning*

Another subtopic that emerged from the data was that teachers had an enthusiasm for learning when they were able to select their own topics. Says Bridget, a first grade teacher:

I feel like with action research, even though it required more of me at the beginning, I was more excited about doing it. It ended up being much more helpful than a typical staff development seminar. In the bigger sense of the word, if somebody came back and told me to do something with my class, I would come back and do it and that would be it. The way this was set up, I know how to apply the methodology. To me, that’s real learning.

Paula, a media specialist, also stated, “[when you are able to select the topic] you absolutely want to learn more about it.”

In summary, the participants in this study cited many benefits of conducting action research which were supportive of previous research regarding the ways that adults learn best. The teachers shared examples of disorienting dilemmas when they spoke of experiencing confusion, frustration, and even negative self-concepts related to their inability to solve the problems in their classrooms. Further, the teachers shared thoughts about their satisfaction with being able to select their own topics, and that they had an increased sense of ownership and excitement for learning because of their interest in this personal selection. Such interest in learning about topics of interest to oneself is a key foundation of adult learning. All teachers reported that both this disorienting dilemma and being able to select their own topics were beneficial aspects of the action research process.
Theme 2: Experiential Learning

Many of the participants said that they enjoyed conducting action research because the learning was “hands-on.” They liked learning in the incidental and informal setting of their own classrooms versus the formal setting of seminars. They stated that they valued the knowledge that they discovered for themselves in an active and real world setting. The main themes which emerged from the data that were supportive of experiential learning were the teachers’ immediate application of knowledge, the desire to learn about true-life problems, and the active engagement offered by action research.

Experiential Learning- Category Three: Immediate Application of Knowledge

One benefit noted by teachers of the experiential learning aspect of action research is that they were able to immediately apply the knowledge they were learning. Debbie, a first grade teacher looking for strategies to improve the oral reading ability of a struggling student said, “You could immediately tackle what was before you and use it to an advantage.” Beverly, a third grade teacher also says:

In doing this, you see the value of it [first hand]. That’s why I feel that I was so fortunate to have taken this action research class, because I feel that I have really grown as a professional and as an educator.

Experiential Learning-Category Four: True-life problem

Teachers also stated a desire to learn about a problem that they were experiences. They wanted to find a solution to the problem, and this desire fueled their investment in learning and engaging in action research.
Says Martha, who was working with students with autism, “What I do in action research is something that I am dealing with every day. And that is something I wanted to learn.” Amy, a kindergarten teacher, similarly stated:

It is helpful to teaching if you are able to make [your topic] meaningful to whatever it is that [the students] are doing. It is very meaningful if it is personal to what you are doing in the classroom.

*Experiential Learning - Category Five: Active Engagement*

Teachers cited the value of being actively engaged in the learning process. They enjoyed being able to see the immediate feedback of the application of their learning. They valued this process of learning actively more than the process of passive learning.

Paula, a media specialist, speaks of the benefits of active engagement:

I prefer the action research because it is right before your eyes and you are watching it develop rather than reading about it or watching about it or studying about it. I find this to be a better process for me because you are actively engaged and because you see immediate feedback. Look at this, look at what happened because we did this or tried this…I was actively involved…It was something I could use.

Beverly, a third grade teacher had similar insights into the benefits of being actively engaged when she said:

Action research encourages you to dive into it because you have to do it. Because of that factor, because you’re not just sitting and listening, you are actually doing all of the work, recording data, it makes it so much more valuable.
In summary, many of the participants said that they enjoyed conducting action research because the learning was “hands-on.” They liked learning in the incidental and informal setting of their own classrooms versus the formal setting of seminars. They stated that they valued the knowledge that they discovered for themselves in an active and real world setting. The teachers shared many thoughts which were supportive of the experiential learning component provided by action research. The teachers benefited from the immediate application of learning, learning about true-life problems, and the active engagement offered by action research.

Theme 3: Reflection

When identifying the beneficial components of action research, teachers repeatedly said that the process of action research encouraged them to reflect intensely on their teaching and the outcomes of the interventions that they implemented to help solve their initial problems. During reflection, the teachers carefully analyzed their practice and the ways in which their actions influenced the behavior and academic progress of their students. The two main themes that emerged from the data regarding the ways that teachers used reflection during the action research process were identifying problems and monitoring progress.

Reflection- Category Six: Identifying Problems

Teachers noted that reflection was important in helping them identify specific problems on which to focus their action research and to improve upon. Says Martha, a teacher of students with autism:

[I owned my learning] more because I was journaling, recording, and knew I had a plan. It made me more conscientious. It makes you think about what you are doing. More responsible to solve a particular
problem that you think will help the class...Journaling helped me identify problem areas.

Amy, a kindergarten teacher, noted similar benefits of reflecting during the action research process:

Doing this systematically was good because I think doing the journal kind of helped me be reflective, which helped me think about things in my classroom that I otherwise might think about but might not do anything about. When written down on paper, I could focus more on a problem.

Debbie, a first grade teacher, also shared thoughts about the benefits that reflection had on her ability to focus on the needs of her students:

The things we did [when conducting action research] seemed to put my thoughts more centered on what I needed to do for that specific persona or child or problem they were having.

Beverly, a third grade teacher, also stated, “Reflection helped me at the beginning of the project because I wondered what I should do for my topic.” Stated Debbie, a first grade teacher, “The journaling made you reflect on your day, use flexibility, and adapt to changes.”

Reflection - Category Seven: Monitoring Progress

Reflection also enabled the teachers to see progress and feel a sense of accomplishment. Beverly, a third grade teacher said, “Reflection helped me think that I was glad I didn’t quit, because we made a big leap. At the end of the project, I thought “look how far we came. I’m glad we didn’t quit.” Another teacher also said, “A benefit of action research is that you can journal so that you can see your progress.” Martha, a teacher of children with autism, also stated:
The journaling was great and such a help. It’s such a help because you can look back and reflect. I like journaling, and I wish I could do it more. Maybe this will help lead me to that more. Journaling helps me understand and appreciate what we are trying to do.

Martha adds:

When you actually collect data and observe and journal you can look back on all your notes and it’s down there in black and white and you can analyze where you were and how far you’ve come.

In summary, teachers repeatedly said that the process of action research encouraged them to reflect intensely on their teaching and the outcomes of the interventions that they implemented to help solve their initial problems. During reflection, the teachers were carefully analyzing their practice and the ways in which their actions influenced the behavior and learning of their students. The teachers shared thoughts about the ways that they used reflection during the action research process to identify problems and monitor progress.

**Theme 4: Effects**

Two main themes emerged from the data regarding the effects that teachers experienced as a result of having conducted action research: teachers perceived an increase in metacognitive self-regulation, and they also noted a corresponding sense of empowerment. This empowerment increased the teachers’ confidence to act upon their ideas and to influence their teaching performance. Both themes originated as a result of teachers’ conduction of action research. The effects were transferred from the action
research process onto teachers’ thinking and confidence independent of the original action research project.

*Effects- Category Eight: Metacognitive Self-Regulation*

Teachers reported thoughts that were demonstrative of self-regulated thinking. They shared examples of self-verbalizations which were indicative of their deciding on strategies prior to beginning a task, assessing their task progress, and changing strategies based on their understanding of what would be effective. Self-regulated learners plan, monitor, and regulate (Schunk & Zimmerman, 1998). The following subcategories showcase teachers’ increased thinking in these three areas as a result of their conduction of action research.

*Planning*

Teachers shared new ways of planning that were generated from their experience with action research. Some of these thoughts related to planning included setting goals, questioning upcoming actions, and analyzing the tasks involved in solving the problems.

Setting goals was one of the effects of teachers’ participation in action research. Bridget, a first grade teacher, mentioned that action research gave her the impetus to begin planning math strategies over the summer in preparation for the upcoming school year:

That’s what I will do over the summer. I will come up with 2 or 3 strategies that will help with math facts. Then I will begin early on and work with it/graph it every day, because then we can practice it. Then, after a few weeks, if it is not working with some students, then I will move on to another strategy.
Martha, an art teacher of students with autism, stated that action research helped her set goals by thinking of the type of distraction free environment that she would design for her students if when she had the opportunity:

    Action research really showed me the direction and had me plan in
    writing and decide what I would do if I had the opportunity.

Other comments were indicative of teachers’ increase questioning regarding upcoming actions.

Beverly, a third grade teacher, said:

    Now, as I approach my reading groups, I feel that I have a better handle
    on it. When we have to assess our children for possible placement in
    early intervention programs, I feel I have more tools at hand from doing
    the project.

Bridget, a first grade teacher, also questioned upcoming actions:

    Action research started the wheels turning about “how can I implement
    this on a bigger scale with all of my children? What other situation do I
    see problems to which I can apply strategies?

Marie also shared further thoughts questioning upcoming actions regarding instruction when she said, “That is something I should look into next year, ‘What would excite them?’”

    Teachers also stated that they were analyzing the tasks that would be necessary or best
    suited for solving their problems. Such task analysis helped them when planning. Bridget
    continued regarding task analysis of problems:

    [Action research] has really taught me a lot about teaching in the classroom. It did
    help me realize that if I want to figure out what is going to help somebody, then I
    have to do one thing at a time for a while, and then narrow it down to what really
works for the child…It really did teach me and I will use this method of thinking when I come across children who are struggling in any area. I will narrow it down and pick one strategy and just pick one, and just focus on that for a while. My tendency is to throw everything at you and hopefully something will stick.

Martha, the teacher working with students with autism also noted the way that action research also helped her analyze tasks that would be involved in problem solving:

It wasn’t overwhelming because we could pinpoint one or two problems and work on them. It wasn’t so overwhelming. I could accomplish one or two of them.

_Monitoring_

Teachers became more aware of their own learning and shared thoughts that were indicative of increased attention, self-questioning, self-reflection, and self-instruction.

Several teachers cited an increase in monitoring as it related to their attention to their teaching. Debbie, a first grade teaching trying to increase reading fluency for a struggling student, said:

I was definitely pleased after the action research project. I feel that I learned from action research, especially about differentiating instruction and meeting the needs of different learners.

Amanda, a kindergarten teacher trying new strategies to challenge a gifted child, said regarding her increase in attention to her teaching:

I think I learned a lot as a teacher to be aware [of the needs of gifted student] and find what I can do to help these children.
Bridget, a first grade teacher who had implemented strategies to help a student struggling with reading fluency, said regarding her increase in attention to teaching:

I think the part [of the action research project] that was more intimidating to me at first was, “Am I going to pick the wrong kind of situation or tool to measure?” That helped me be a better teacher, because it makes me realize the need to free up students in my classroom. They are such pleasers, they want to do the right thing. So I will help them to free them up, so they can think and do, and not be afraid of the [learning] process.

Another benefit regarding her increased attention to teaching from action research was cited by Bridget, when she said, “Action research was a tool that helped me know if students were getting better.” And Martha, the art teacher, also noted an increase in her attention to teaching when she said, “Action research made me pinpoint areas, especially in my classroom, that could really have an impact on their distractibility.”

Some teachers increased their own self-questioning regarding aspects of their teaching. Martha stated:

I am more aware of who is affected, who is distracted more than another child. I seem to single them out more. As they come to class, I zone in on “Are they doing better today because of what I’ve done?” I wouldn’t probably be doing that if it weren’t for this class/action research.
Other teachers demonstrated an increase in self-reflection. Bridget stated:

I felt…actually being pleased and more relaxed because I had something that was so specific because I could see it. Even from the second day it helped me as a teacher because I could see what I was doing. I wasn’t thinking “What am I going to do today?” I knew that I was going to be sticking with this for a few weeks. I had something purposeful, and that helped me feel relaxed and feel better.

Self-instruction also increased in teachers who conducted action research. Paula, a media specialist working with a student who was compulsive and very distracted, said of her increased ability to learn as a result of knowing how to use action research:

Action research was a way of formalizing and writing down what I maybe would have just thought “maybe I’ll try this, or I’ll try this.” Action research brought it together in a more cohesive way.”

Paula also added other benefits from action research to her increased ability to self-instruct:

I think this action research process will make me review skills with other classes in a different way and track progress in a different way so I can actually see the data. Maybe my data skills have improved…I have always taught the skills, but I haven’t tracked the result of teaching that skill. I have observed, but not on paper. I will [look a little more closely] instead of assuming “OK, this worked, we’ve had this.”

Regulating

As a result of conducting action research, teachers shared thoughts indicative of the regulatory behaviors and thoughts associated with self-evaluation and self-reaction. Teachers
shared thoughts that would enable them to change their behavior and correct problems with their new understanding.

Examples of self-evaluation were evidenced by several teachers when they reflected on the benefits of action research. Peggy, a third grade teacher, made the following statement which was indicative of her increased self-evaluation:

I think that action research was a beginning. It showed me that my being aware is not enough, that they need to be aware. It made me more tolerant, positive toward finding a solution, more willing, hopeful there are other options…It makes you focus on your weaknesses.

Bridget, a first grade teacher, also shared reflections which demonstrated the benefits that conducting research had on her ability to self-evaluate:

I have transferred [what I learned from action research] in that I tend to analyze things, but now I realize that its not enough to mull it over in your head, you must have a way to record it and find the results, to evaluate. That was the piece of the puzzle that I wasn’t really doing, and in that respect it will carry over. I can’t think of an instance where I wouldn’t use it.

Debbie, a first grade teacher, shared these self-evaluative thoughts:

I know that every child is different, and what works for one might not work for another, but I am more apt to get on it immediately and get it done. Focus in on the problem…I felt like action research improved the way I deal with things, like knowing what to do in a certain circumstance…I’s more in tune in my mind
now what to do when this same incident arises in the future, which it will.

Some teachers also shared comments that demonstrated an increase in their self-reactions. Beverly, a third grade teacher stated:

I feel an increased sense of flexibility with my groups and being able to move them around based on their needs. I can move in a direction, evaluate, and make changes when needed with the students in the ability grouping settings.

Paula, the media specialist, also shared comments that demonstrated an increase in her regulating of her teaching emanating from an increase in self-reaction:

After working through the action research, I realized that it made me actually look at the progress the child was making and the way I was adapting to help him, whereas had I not been putting it down in action research format, I probably would not have seen some of the progress and seen some of the key things that made the progress happen.

In summary, teachers reported thoughts that were demonstrative of self-regulated thinking. They shared examples of self-verbalizations which were indicative of deciding on strategies prior to beginning a task, assessing their task progress, and changing strategies based on an understanding of what would be effective. Self-regulated learners plan, monitor, and regulate (Schunk & Zimmerman, 1998). The subcategories reviewed in this section on self-regulated thinking showcased teachers’ increased thinking in these three areas which resulted from their conduction of action research.
Effects- Category Nine: Empowerment

As a result of the self-regulatory processes that were enhanced through teachers’ participation in action research, many shared self-verbalizations which demonstrated a heightened sense of personal control, which many likened to being “empowered”. Most teachers indicated that action research empowered them either through an increase in confidence to act on their ideas or an increase in confidence about teaching performance. Teachers reported feelings of validation about their teaching abilities and that they had a new way of thinking that they could use to help them with their teaching abilities or problem solving in the future.

Confidence to act on ideas

Several teachers shared thoughts that demonstrated the possession of a new confidence that would enable them to act on their ideas. Martha, an art teacher of students with autism, said:

If there is something really troubling me, I know what to do about it myself.

Action research made me realize I did have control, and helped me know what I would do if I had the opportunity. Action research [when working on the daily journals] made me realize that there were certain things I did have control over.

Bridget, a first grade teacher focusing on a new strategy to help a struggling student with reading fluency, stated:

Action research makes you feel empowered. I can do something about this. It gives you a direction to zero in on.
Beverly, a third grade teacher who was also focusing on improving a student’s reading fluency, elicited:

Action research] has given me a great sense of ‘I can help this child, I’m not going to get bent out to shape over it, but I can actually do something about it.’” She continued:
Action research has empowered me to made some changes in my classroom that I would have been a little more hesitant to do.

Martha, an art teacher of students with autism, stated:

After action research, I felt confident, hopeful, successful. I knew that if I work on this, I can solve the problem.

Other teachers expressed thoughts which were indicative of an increased sense of empowerment which originated from having a new framework of thinking that could help them find solutions to problems they face when teaching. Speaking of the empowering benefits of this framework, Debbie, a first grade teacher, stated:

It made me more organized. It gave me a framework, something to rely on, it validated things I was doing.

*Confidence to influence teaching performance*

Several teachers shared benefits of increased confidence regarding teaching performance that they derived as a result from engaging in action research. Beverly, a third grade teacher, shared these thoughts:

Afterward, I felt more confident. I can do it again next time. Next year I will probably have several students who will need some interventions.
Now I know that even thought it may be tough in the beginning, I know we
are going to get through it. I will be more confident next time.

Other teachers shared similar thoughts of increased confidence, including Bridget, who stated, “It made me feel like a better teacher.” Amanda, the kindergarten teacher, also said that she felt “pleased that things had changed and had a sense of accomplishment.”

Martha said:

I don’t feel as frustrated. I feel that [the students] have a better chance of meeting the objectives and processes that I have laid out for them in their artwork.

Bridget, a first grade teacher, said:

I was pleased and encouraged, mainly because not only did I see that it was helping, but I had information that I could give the parents on how they could continue to help her over the summer. They could be taught this method and strategy. That was huge. Action research helped me not only with that child, but if I have a child like that again next year, I will know immediately what to do, and I’m ready now to try another strategy.

She added about the way in which her new way of thinking impacted her self-monitoring of her own teaching:

I am working more hands-on with my students. In my mind, I am thinking, OK, let’s back up, see if I can teach this differently, if I can reach the students.
Data Representation Per Category

The majority of this chapter highlighted the qualitative data which supported each of the themes and categories. This overview provided an insight into teachers’ perceptions of the impact of action research on their metacognitive development. While each theme and category was represented throughout this chapter by qualitative data regarding teachers’ thoughts, the frequency of the data is also important to understanding teachers’ perceptions of the impact of action research (see Table 4.1).

All teachers reported metacognitive benefits derived from engaging in the process of action research. The themes which were indicative of teachers’ generation of metacognition included adult learning, experiential learning, and reflection. Within the theme of Adult Learning, 7/7 teachers reported disorienting dilemmas previous to their conduction of action research, and 5/7 teachers reported benefits from selecting their own topic of study. Within the theme of Experiential Learning, 6/7 teachers reported benefits from categories indicative of at least one category of experiential learning. Within the category of reflection, 4/7 teachers reported benefits of reflection concomitant their participation in action research.

The final theme, Effects, showed the further benefits which resulted from teachers’ conduction of action research. Within the theme of Effects, 7/7 teachers reported increases in metacognitive self-regulation independent of the original action research project, and 4/7 reported feelings of empowerment which resulted from this increased self-regulation. This data demonstrated that the initial metacognitive activities of adult learning, experiential learning, and reflection, which are stimulated by the action research
process, provided a further benefit: teachers experienced increases in metacognitive self-regulation and empowerment which extended beyond their initial action research project.

Table 4.1

**Representation of Data Frequency Per Category**

<table>
<thead>
<tr>
<th>Theme 1: Adult Learning</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Category and Number of Teachers Reporting</strong></td>
<td></td>
</tr>
<tr>
<td>Disorienting Dilemma</td>
<td></td>
</tr>
<tr>
<td>Ineffectiveness of initial strategies (5/7)</td>
<td></td>
</tr>
<tr>
<td>Searching for a strategy (5/7)</td>
<td></td>
</tr>
<tr>
<td>Interpersonal impact (6/7)</td>
<td></td>
</tr>
<tr>
<td>Total # of Teachers Reporting Data in Category (7/7)</td>
<td></td>
</tr>
<tr>
<td>Selecting Own Topic</td>
<td></td>
</tr>
<tr>
<td>Satisfaction/Sense of Ownership (5/7)</td>
<td></td>
</tr>
<tr>
<td>Enthusiasm for Learning (2/7)</td>
<td></td>
</tr>
<tr>
<td>Total # of Teachers Reporting Data in Category (5/7)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Theme 2: Experiential Learning</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Category and Number of Teachers Reporting</strong></td>
<td></td>
</tr>
<tr>
<td>Immediate Application of Learning (2/7)</td>
<td></td>
</tr>
<tr>
<td>True-Life Problem (2/7)</td>
<td></td>
</tr>
<tr>
<td>Active Engagement (3/7)</td>
<td></td>
</tr>
<tr>
<td>Total # of Teachers Reporting Data in Category(6/7)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Theme 3: Reflection</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Category and Number of Teachers Reporting</strong></td>
<td></td>
</tr>
<tr>
<td>Identifying Problems (4/7)</td>
<td></td>
</tr>
<tr>
<td>Monitoring Progress (3/7)</td>
<td></td>
</tr>
<tr>
<td>Total # Teachers Reporting Data in Category (4/7)</td>
<td></td>
</tr>
</tbody>
</table>
**Theme 4: Effects**

<table>
<thead>
<tr>
<th>Category and Number of Teachers Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metacognitive Self-Regulation</td>
</tr>
<tr>
<td>Planning (4/7)</td>
</tr>
<tr>
<td>Monitoring (4/7)</td>
</tr>
<tr>
<td>Regulating (5/7)</td>
</tr>
<tr>
<td>Total # Teachers Reporting Data in Category (7/7)</td>
</tr>
<tr>
<td>Empowerment</td>
</tr>
<tr>
<td>Confidence to Act on Ideas (4/7)</td>
</tr>
<tr>
<td>Confidence to Influence Teaching Performance (4/7)</td>
</tr>
<tr>
<td>Total # Teachers Reporting Data in Category (4/7)</td>
</tr>
</tbody>
</table>

**Summary**

In summary, most teachers indicated that action research empowered them either through an increase in confidence to act on their ideas or an increase in confidence about teaching performance. Teachers reported feelings of validation about their teaching abilities and that they had a new way of thinking that they could use to help them with their teaching abilities or problem solving in the future.

To conclude, this chapter presented the findings of teachers’ perceptions of the impact of action research on metacognitive growth. Individual participants were introduced and common themes were discussed. Four common themes emerged from the data: adult learning, experiential learning, reflection, and effects. Within these themes, 9 categories were presented and supported with data from the participants’ perceptions. The following chapter will include a summary of the research, a discussion of the findings, and implications of the findings.
CHAPTER 5
SUMMARY, DISCUSSION, AND IMPLICATIONS

Introduction

The purpose of this study was to describe teachers’ perceptions of the impact of action research on metacognitive development. This chapter begins with a summary of the research study and is followed by a discussion of the significant research findings. Implications for future research, principals, colleges and universities, professional learning, teachers, and policy makers are also included.

Summary of the Study

The purpose of this study was to examine teachers’ perceptions of the impact of action research on their metacognitive development and to propose a theory that is grounded in data to explain their perceptions. The initial research questions used to guide this study were: (a) What are teachers’ perceptions of their metacognitive development during and after action research? (b) What impact did conducting action research have on later self-regulation of instructional strategies independent of action research? This study was conducted in an elementary school where action research was being taught in a small group staff development setting. Participants were selected based on their completion of an action research project and their willingness to participate voluntarily in the study.

A grounded theory research design was used to guide the research process through each phase from the data collection to the final writing. Constant comparative methods were used to collect, code, and analyze the data. In-depth, face-to-face interviews and follow-up interviews
were conducted with seven teachers during the Spring and Fall of 2007. Documents and observations were also used to provide context for the study. Categories emerged as the researcher collected and analyzed the data. Through continued analysis, connections among categories were identified, and theoretical considerations emerged.

In chapter 4, the research findings were presented. Based on the experiences of the individual participants, 4 themes, 9 categories, and 19 sub-categories emerged as significant to explaining teachers’ perceptions of the impact of action research on metacognitive development. The main categories presented were: Adult Learning, Experiential Learning, Reflection, and Effects.

This study determined that teachers perceive an increase in metacognitive growth as a result of conducting action research. The study demonstrated that metacognitive growth occurred in situations which were conducive to adult learning, experiential learning, and reflection. When conducting action research, teachers experienced growth related to adult learning when they experienced disorienting dilemmas and when they were able to select the topic of their study. Within experiential learning, teachers noted metacognitive connections during the action research process when they were able to immediately apply their learning, when they were able to invest their time learning about real life situations in their classrooms, and when they were actively engaged in the learning process. Teachers participating in action research also perceived metacognitive gains when they engaged in reflection, as the practice of reflecting helped them to identify problems and monitor progress.

Two primary effects resulted from the teachers’ engagement in action research. The first effect was that teachers expressed metacognitive self-verbalizations regarding self-regulation of teaching practices. The second effect was that teachers expressed increased empowerment and
confidence regarding their abilities to act on their ideas and influence the way they teach as a result of these self-verbalizations (see Figure 5.1).

Connecting Adult Learning, Experiential Learning, and Reflection with Metacognition

This study established that teachers perceive metacognitive development in the areas of adult learning, experiential learning, and reflection as a result of conducting action research. These findings are consistent with the commonalities in the literature on metacognition and the literature on action research which are both inclusive of adult learning, experiential learning, and reflection. However, action research and metacognitive development have not been linked in the literature to date. The following sections highlight the commonalities shared between action research and metacognition in each of these key areas, and include teachers’ perceptions from this study regarding the impact that conducting action research had in each of these areas.

Theme 1: Adult Learning

The participants in this study cited many benefits to conducting action research which were supportive of previous research regarding the ways that adults learn best. The teachers shared that they were experiencing confusion, frustration, and even negative self-concepts related to their inability to solve the problems about which they chose to focus their action research projects. Teachers also shared thoughts about their satisfaction with being able to select their own topics, and that they had an increased sense of ownership and an excitement for learning because of the ability to select their own topics.

Disorienting Dilemmas

One area in which teachers noted experiences that correlated with the literature on adult learning was when they experienced disorienting dilemmas associated with the problems in their classrooms about which they chose to conduct action research. The main sub-categories in
which the teachers in this study experienced disorienting dilemmas were when they noticed the ineffectiveness of previously attempted strategies, when they did not know what other options or strategies were available, and when they had negative self-concepts relating to their inability to solve the problem.

Disorienting dilemmas being precursors to adult interest and investment in learning is also supported by the literature on adult learning. The adult learning theorist, Mezirow (1990), put forth his theory of perspective transformation which proposed that a change in thinking often accompanies adult learning. Such transformational learning is believed to follow a confusing or disorienting dilemma that interrupts normal routines. When this disorienting dilemma is combined with reflection and action, the adult is enabled to be cognizant of assumptions guiding his or her life and can act accordingly on this knowledge (see Table 5.1).

Table 5.1

<table>
<thead>
<tr>
<th>Study Findings</th>
<th>Correlation to Current Literature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers experienced disorienting dilemmas when previously attempted strategies were unsuccessful.</td>
<td>Adult learning theorist, Mezirow (1990) proposed that transformational learning is believed to follow confusing or disorienting dilemmas that interrupt normal routines. When combined with reflection and action, the adult is enabled to be cognizant of assumptions guiding his or her life and can act accordingly on this knowledge.</td>
</tr>
</tbody>
</table>
| Teachers experienced disorienting dilemmas when they did not know other options or strategies. | }
Teachers experienced disorienting dilemmas when they had negative self-concepts relating to their inability to solve the problem.

Benefits of self-selecting topic of study

Teachers’ thoughts about the benefits of being able to self-select their own topics of study were supportive of the literature about adult learning (see table 5.3). The findings from this study showed that teachers experienced satisfaction when they were able to select their own study topics. Being able to select a topic of interest is a key component of the action research process. As a result of being able select their own topics, the teachers experienced a sense of ownership and excitement about their learning.

Such satisfaction from being able to self-select their topic of study is linked what we know from the literature about how adults learn best. Adult learners are motivated to learn things they believe they need to learn, based on their experiences. Knowles (1970) believed that adults would be interested in initiating the topics of study based on their interests and needs, instead of being told what they would like to learn by their instructors. Knowles also discussed another assumption that encompassed the others: adult learning is primarily intrinsically motivated. Comments elicited from the teachers demonstrated that their desires to learn about their chosen topics were intrinsically motivated.
Table 5.2

**Benefit from Selecting Own Topic of Study**

<table>
<thead>
<tr>
<th>Findings from Study</th>
<th>Correlation to Literature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers experienced a sense of ownership of their learning as a result of being able to select their own topics.</td>
<td>Knowles (1970) believed that adults would be interested in initiating the topics of study based on their interests and needs. He also assumed that adult learning is primarily intrinsically motivated.</td>
</tr>
<tr>
<td>Teachers experienced a sense of enthusiasm for their learning as a result of being able to select their own topics.</td>
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</tbody>
</table>

*Linking Action Research and Metacognition Through Adult Learning Theory*

Teachers’ thoughts from this study demonstrate that one of the benefits of action research is that it supports what we know from the literature about the ways that adult learn best. The findings from this study show that key components of adult learning theory are imbedded in the action research process, and these facets of adult learning also engage teachers’ metacognitive thinking, as a competent learner is one who is alert to the process of self-questioning, monitoring, and regulating (Roth, 1996). Such metacognitive self regulation is “checking and evaluating to determine whether the task matches pre-conceived notions of it, whether selected strategies work, whether task performance is adequate, and whether comprehension is proceeding as it should” (Schmitt & Newby, 1986, p.30, in Roth, 1996).

While current research supports the commonalities of action research to adult learning and metacognition to adult learning, the literature does not link action research and metacognition. This study demonstrates a link between the two by noting teachers’ perceptions of metacognitive growth resulting from the metacognitive activities involved in both adult learning and action research.
Experiential Learning

Teachers shared experiences and thoughts that were supportive of several components of experiential learning when they were conducting action research, including the benefits of being able to immediately apply their learning, having a desire to learn about real life problems, and being actively engaged during their learning process. The participants said that they enjoyed conducting action research because the learning was “hands-on.” They liked learning in the incidental and informal setting of their own classrooms versus the formal setting of seminars. They stated that they valued the knowledge that they discovered for themselves in an active and real world setting.

The findings from this study demonstrate that teachers are involved in actions that are supported by experiential learning theory when they are engaged in action research (see table 5.4). Experiential learning concentrates on learning “hands-on.” Johnson and Johnson (1999) noted that experiential learning is the generation of an action theory from one’s previous experiences and consistent improvement of one’s effectiveness through modification. They noted that the positive effects of experiential learning surface when the learner’s cognitive structures are changes, attitudes are modified, and pool of behavioral skills is increased. According to Johnson and Johnson (1999) these three elements work in unison for positive change.

Immediate application of learning

Teachers reported that they benefited from being able to immediately apply their knowledge during the action research process. They enjoyed seeing the benefits of the new strategies, and they were able to observe the benefits of their actions immediately when they saw the students’ behavioral or academic improvements.
Research on experiential learning concentrates on learning “hands-on”, and has found that much of the learning that occurs in the workplace is more incidental and informal that the formal, job-training seminars (Glickman, Gordon, & Ross-Gordon, 1998). Smylie (1995), considered an integration of work and learning as being a characteristic important to school learning environments that stimulate teacher learning.

True-life problems

Teachers also noted that being able to learn about real-life problems was a benefit of action research. They noted a desire to learn about problems that they were experiencing. They wanted to find a solution to the problem, and this interest prompted their investment in learning and engaging in action research.

Such learning about real-life problems is supported by the literature regarding experiential learning. Johnson and Johnson (1999) noted that experiential learning is the generation of an action theory from one’s previous experiences and consistent improvement of one’s effectiveness through modification. They promoted experiential learning over the more traditional transference of information and knowledge. York-Barr (2001) stated that “Learning from practice…requires learners to think critically about the meaning of real-world experiences.” (p. 72).

Active Engagement

Another benefit that teachers noted about action research that is linked to the literature on experiential learning is that the teachers were actively engaged during the learning process. They enjoyed being able to see the immediate feedback of the application of their learning. They valued this process of learning actively more than the process of passive learning.
The importance of active engagement is linked to the literature on experiential learning. Among the benefits that Kurt Lewin (1948) cited of the thought processes involved in the experiential learning cycle are that people will believe more in the knowledge they have discovered themselves than in knowledge presented by others, and that learning is more effective when it is an active rather than a passive process.

Table 5.3

**Findings of Experiential Learning**

<table>
<thead>
<tr>
<th>Findings From Study</th>
<th>Correlation to Literature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers benefited from being able to immediately apply knowledge to their classrooms.</td>
<td>York-Barr (2001) stated that “Learning from practice…requires learners to think critically about the meaning of real-world experiences.”</td>
</tr>
<tr>
<td>Teachers benefited from being able to work on a true-life problem.</td>
<td>Johnson and Johnson (1999) noted that experiential learning is the generation of an action theory from one’s previous experiences and consistent improvement of one’s effectiveness through modification.</td>
</tr>
<tr>
<td>Teachers enjoyed the active engagement of the hands-on learning.</td>
<td>Much of the learning that occurs in the workplace is more incidental and informal than the formal, job-training seminars (Glickman, Gordon, &amp; Ross-Gordon, 1998). Kurt Lewin (1948) said that people will believe more in the knowledge that they have discovered themselves than in knowledge is presented by others, and learning is more effective when it is active rather than passive.</td>
</tr>
</tbody>
</table>
Linking Action Research and Metacognition through Experiential Learning

The teachers shared the ways that the process of action research encouraged experiential learning. Such admissions also link directly to increased metacognitive self-regulation. While engaging in hands-on learning, the individual is given opportunity to apply one’s thinking directly to real life tasks. As self regulation is based upon the individual being able to plan, monitor, reflect, and adapt strategies as needed, the forum provided by experiential learning is optimal for promoting metacognitive growth.

The activities in which one engages while involved in experiential learning encourage metacognitive growth. Henton (1996) states:

The experiential learning cycle reminds us of the importance of metacognitive activity to cognitive development. At least half of the cycle prompts metacognition, or thinking about thinking. Once students move past reflecting on the activity, they draw generalizations and abstractions, then work to extend and apply. The work of this phase of the cycle is to step back from the activity and look at it from a new perspective and with the goal of learning from it (p.46).

While engaging in hands-on learning, the individual is given opportunity to apply one’s thinking directly to real life tasks. As self-regulation is based upon the individual’s ability to plan, monitor, reflect, and adapt strategies as needed, the forum provided by experiential learning is optimal for promoting metacognitive growth.

While current literature supports the commonalities of action research and experiential learning, and metacognition to experiential learning, the literature does not link action research and metacognition. This study demonstrates a link between the two by noting teachers’
perceptions of metacognitive growth resulting from the metacognitive activities involved in both experiential learning and action research.

**Theme 3: Reflection**

The teachers in this study noted that action research encouraged them to reflect intensely on their teaching and the outcomes of the interventions that they implemented to help solve their initial problems. During reflection, the teachers carefully analyzed their practice and the ways in which their actions influence the behavior and learning of their students. Teachers stated that reflection was beneficial to helping them identify problems and monitor progress. Such thinking is indicative that action research encouraged metacognitive self-monitoring and self-regulation through this increase in reflection.

*Identifying problems*

Teachers’ noting that the reflective aspects of action research aided them in identifying problems in their teaching practice is supported by the literature on reflection (see table 5.5). Much literature cites the role that reflection has on leading teachers to question their effectiveness and thus increase their cognizance regarding their teaching practices, to interpret the outcome of their actions, and to make corresponding action improvements (Clark & Lampert, 1986; Colton & Sparks-Langer, 1993; Mayer, 1992; Ross & Hannay, 1986). Effective teachers are able to reflect-in-action (Schon, 1988) when they respond to the needs of a situation.

*Monitoring Progress*

Teachers also noted that as action research prompted their reflection, the reflection enabled them to monitor their progress. They were able to gauge the benefits of the newly implemented strategies, and feel a sense of accomplishment from noting the progress. This correlates with the definition of reflection from Schulman (1987):
[reflection is] what a teacher does when he or she looks back at the teaching and learning that has occurred, and reconstructs, then reenacts, and/or recaptures the events, the emotions, the accomplishments…Reflection is not merely a disposition…or a set of strategies, but also the use of particular kinds of analytic knowledge brought to bear on one’s work (p. 18).

Table 5.4
Findings Regarding Reflection

<table>
<thead>
<tr>
<th>Findings of Study</th>
<th>Correlation to Literature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reflection enabled teachers to identify problems.</td>
<td>Dewey (1933) suggested that the basis of reflective thinking “involves an act of searching, hunting, and inquiring to find material that will resolve the doubt, settle, and dispose of the perplexity” (p.12).</td>
</tr>
<tr>
<td>Reflection enabled teachers to monitor progress and accomplishments.</td>
<td>Schulman (1987) defined reflection as what a teacher does when he or she looks back at the teaching and learning that has occurred, and reconstructs, then reenacts, and or recaptures the events the emotions, the accomplishments.</td>
</tr>
</tbody>
</table>

Linking Action Research and Metacognition through Reflection

Reflection is also a critical component of metacognition. A way of thinking about thinking, metacognition is a form of reflection-in-action, which is one of the most sophisticated ways to reflect (York-Barr et al., 2001). Reflection provides a basis for thinking about possible changes, and it is a basis upon which the actions of metacognitive self-regulation are based.
(Hartman, 2001). Reflection must take place prior to deciding which areas of teaching need improvement (Schon, 1983). Reflection is prerequisite to monitoring and regulating one’s thinking. Such metacognitive thinking takes reflection a step further and helps people regulate and apply reflective thinking (Marchant, 2001).

While current literature supports the commonalities of action research and reflection, and metacognition to reflection, the literature does not link action research and metacognition. This study demonstrates a link between the two by noting teachers’ perceptions of metacognitive growth resulting from the activities involved in both reflection and action research.

Effects

*Theme Four*

When discussing the benefits that came to the participants from engaging in action research, two categories emerged in this fourth theme: an increase of self-verbalizations regarding their ability to self-regulate, which is a component of metacognition, and a corresponding sense of empowerment and confidence about one’s teaching.

All of the teachers reported an increase in their self-verbalizations regarding metacognitive self-regulating, and they expressed feelings of empowerment which emanated from the increased confidence and control that they derived from these self-verbalizations. This increased sense of empowerment influenced their confidence to act upon their ideas and to influence their teaching performance. The effects were transferred from the action research process onto teachers’ thinking and confidence independent of the original action research project.
Self-verbalization of Self-Regulation

The teachers noted increased self-verbalizations involving self-regulation in the areas of planning, monitoring, and regulating. Within the category of planning, teachers noted increased self-verbalizations about setting goals, questioning upcoming actions, and analyzing the tasks involved in solving the problems. This correlates with the literature on metacognition, which states that such activities help activate prior knowledge, which further enables the learner to organize and comprehend the upcoming activity more easily (see table 5.5). Forethought is involved in this type of self-regulation, as individuals analyze tasks and integrate self-motivation beliefs (Hartman, 2001).

Within the category of monitoring, teachers noted increased self-verbalizations regarding tracking attention, self-questioning, self-reflection, and self-instruction. This correlates with the literature regarding the monitoring aspects involved in self-regulation. Schunk and Zimmerman (1998) state that tracking attention, self-questioning, self-reflection, and self-instruction are involved in self-monitoring, and that self-monitoring is central to metacognitive activities. Self-monitoring allows us to focus so that our metacognitive awareness enhances our cognitive and behavioral functioning (Ellis & Zimmerman, 2001). Individuals must monitor their learning so that they can regulate it (Schunk & Zimmerman, 1998).

Within the category of regulating, teachers shared thoughts indicative of an increase in self-verbalizations regarding the self-reflective activities of self-evaluation and self-reaction. Teachers shared thoughts that would enable them to change their behavior and correct problems with their new understanding. This also correlates with research conducted by
Schunk and Zimmerman (1998) who stated that these regulatory strategies enable learners to correct their behavior and repair problems with their understanding.

The ways in which self-regulation skills are beneficial to teachers can be seen when examining the types of activities in which a teacher engages prior to, during, and after instruction (Hartman, 2001). Prior to instruction, teachers must plan for differentiated instruction to meet students’ various ability and interest levels. During instruction, metacognitive self-monitoring and self-regulation helps teachers make quick and important decisions about instructional delivery, managing students’ behavior, and interact effectively with the students (Hartman, 2001; Manning & Payne, 1996). Certainly, metacognition plays a key role in teachers’ thought processes after instruction, as effective teachers reflect on what they teach, why they teach it, and how they teach it (Hartman, 2001; Manning & Payne, 1996). Teachers who teach metacognitively are also aware of the importance of the feedback that they provide to students, and they reflect on the effectiveness of their feedback (Hartman, 2001).

Table 5.5

<table>
<thead>
<tr>
<th>Metacognitive Self-Regulation Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Findings from Study</strong></td>
</tr>
<tr>
<td>Teachers had increased self-verbalizations about setting goals, questioning upcoming actions, and analyzing tasks involved in solving problems.</td>
</tr>
<tr>
<td><strong>Correlation to Metacognitive Literature</strong></td>
</tr>
<tr>
<td>This correlates with metacognitive literature, which states that these activities activate prior knowledge, which enables the learner to organize and comprehend the upcoming activity more easily (Hartman, 2001).</td>
</tr>
</tbody>
</table>
Teachers who noted growth regarding monitoring noted that they had increases in self-verbalizations regarding tracking attention, self-questioning, self-reflection, and self-instruction.

Schunk and Zimmerman (1998) stated that these activities are components of self-monitoring, which is central to metacognitive activities.

In the category of regulating, teachers noted increases in self-verbalizations regarding the self-reflective activities of self-evaluation and self-reaction. Teachers shared thoughts that enable them to change their behavior and correct problems with the new understanding.

Schunk and Zimmerman (1998) stated that these regulatory strategies enable learners to correct their behavior and repair problems with their understanding.

Teacher Empowerment

Teacher empowerment emerged as a benefit of action research which resulted from teachers’ increased self-verbalizations regarding metacognitive self-regulating. According to this study, teachers felt empowered to direct their own professional development. They also perceived increases in their confidence to act upon their ideas and influence their teaching performance. Teachers reported feelings of validation about their teaching abilities and that they had a new way of thinking that they could use to help them with their teaching abilities or problem solving in the future.

These feelings of increased confidence parallel the information from the literature about teacher empowerment (see Table 5.6). Melenyzer (1990) studied teacher narratives and conducted observations of empowered teachers. Melenyzer sought to identify teachers’ perceptions of empowerment by seeking their own definitions of empowerment and how empowerment is accomplished. Based on these observations and reviews, Melenyzer (in Blase & Blase, 2001) defined empowerment as:
The opportunity and confidence to act upon one’s ideas and to influence the way one performs in one’s profession. True empowerment leads to increased professionalism as teachers assume responsibility for and an involvement in the decision making process (p. 16).

This definition parallels the important role that empowerment plays in teachers’ abilities to improve conditions in their classrooms (Blase & Blase, 2001). This definition of empowerment varies from the more typical definitions of empowerment which focus more exclusively on the type of empowerment experienced by teachers who are influencing decision making at the school level.

Table 5.6

**Teachers’ Perceptions of Increased Empowerment.**

<table>
<thead>
<tr>
<th>Findings from Study</th>
<th>Literature on Empowerment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers reported an increase in confidence to act on ideas.</td>
<td>Melenyzer (1990) defined empowerment as the opportunity to act upon one’s ideas and to influence the way one performs in one’s profession.</td>
</tr>
<tr>
<td>Teachers reported an increase in confidence to influence their teaching performance.</td>
<td></td>
</tr>
</tbody>
</table>

**Self-Verbalization: The Core Category**

Self-verbalization was identified as the underlying theme to teachers’ perceptions of the impact of action research on their metacognitive development of self-regulation. Through the activities involved in the cycle of action research, which encouraged metacognitive development in areas related to adult learning, experiential learning, and reflection, teachers began to develop
self-verbalizations regarding self-regulation. The teachers were able to extend these self-verbalizations to teaching situations beyond the initial action research. Such ability to self-verbalize regarding self-regulation empowered teachers with confidence to act on their ideas and influence their teaching performance (see table 5.1).

Self-verbalization is particularly important to the self-regulation process, for it provides the “voice” that encourages individuals to learn, apply, and continue to use the self-regulatory strategies. Learners who self-verbalize are likely to focus and maintain their attention. In turn, the newly learned information or skill has a higher rate of retention (Schunk, 1982). As a form of rehearsal, self-verbalization provides the learner with an opportunity to develop a strong sense of personal control, which in turn can raise motivation for learning and self-efficacy.

The important role that self-verbalization plays in influencing teachers’ self-regulation was discussed by Vygotsky (1978) when he described his theory of verbal self-regulation. This theory of self-verbalization described the major component of verbal self-regulation as being purposeful, self-directed speech aimed inward to promote accomplishment of goals. A person’s verbal thoughts are metacognitive and directed toward planning appropriate actions to achieve a predetermined goal. The person’s thoughts self-regulate behavior as self-directed speech-to-self assists the person in achieving goals (Manning & Payne, 1996).

Conceptual Framework

Based on the findings, three conceptual ideas will be discussed. Evidence from the data will be presented with these conceptual ideas, along with references to results of this study research in the areas of action research, metacognition, adult learning, experiential learning, reflection, and teacher empowerment. A resulting framework, the Development of Self-Verbalization/Self-Regulation Concomitant Action Research, is also presented (see Table 5.1).
The processes involved in action research promote metacognitive growth.

Teachers in this study identified the activities involved in adult learning, experiential learning, and reflection as being influential in the stages of action research (Glanz, 2005; Imel, 2002; York-Barr, 2001). Adult learning, experiential learning, and reflection also have ties in the current literature to metacognition (Hartman, 2001; Imel, 2002; Mills, 2000), but a link has not been made between action research and metacognition in the literature. Teachers’ admissions that they did experience benefits related to adult learning, experiential learning, and reflection provide the connection between action research and metacognition that has not appeared in the literature to date.

Conducting action research encourages corresponding self-verbalization of self-regulation.

Not only has a link now been established between metacognition and the activities which occur during the cycle of action research, but a further metacognitive benefit has emerged from this study. As a result of engaging in the activities involved in action research, teachers noted new ways of self-verbalizing regarding self-regulation of teaching. The teachers were able to apply this new self-verbalization to teaching problems independent of the action research project. The activities involved in action research encourage the development of self-verbalization regarding self-regulation. Once learned, the teachers applied this self-verbalization to aspects of their teaching independent of the action research.

Self-verbalization of self-regulation promotes teachers’ feelings of empowerment.

The teachers noted increases in confidence to act on their ideas and confidence to influence their teaching practice after engaging in action research. These feelings of
empowerment emerged as a result of the self-verbalization of self-regulation that was evident when teachers described the benefits of action research.

Figure 5.1

Development of Self-Verbalization/ Self-Regulation Concomitant Action Research

Implications

The implications of the findings will be presented in this section. The first section will provide implications for further research, while the remaining sections will include implications for principals, teachers, professional learning, and policy makers.

Implications for Further Research

Findings from this study suggest the need for additional focus on the research of teacher metacognition. Little research has been done to find what can be done to increase teachers’ metacognitive development for in-service teachers. While research has begun, the field is new.
More emphasis needs to be placed on examining activities which promote teacher metacognition. While the research that has been conducted is helpful, the impetus for encouraging educational leaders to promote metacognitive growth is limited, as the research is limited. Also, research needs to be conducted regarding instructional leaders’ perceptions of the importance of teacher metacognition so that reasons for this lack of focus can be identified.

Findings from this study also suggest additional areas for future research in the field of instructional leadership. Action research has not been embraced by the field of instructional supervision as a method of improving instruction (Glanz, 2005). As this study has demonstrated, teachers do perceive metacognitive development as a result of conducting action research. Therefore, action research could certainly be a tool that could be used by instructional leaders to promote metacognitive growth. Research needs to be conducted to determine what instructional leaders perceive as obstacles to promoting action research. What are other ways that action research can be promoted?

Instructional leaders, in addition to encouraging teachers’ action research, might also benefit metacognitively from conducting their own action research at the school level. The instructional leader holds a key role in instructing teachers by encouraging teachers’ learning and by providing feedback to teachers. Could instructional leaders benefit from increased metacognitive growth regarding their instructional and leadership roles from their own conduction of action research? What would be instructional leaders’ perceptions of the impact of action research on their metacognitive growth? If they do perceive metacognitive gains, what would be the corresponding benefits to schools, teachers, and students from instructional leaders’ increased metacognitive growth? Would a benefit exist to teachers and the professional learning
environment from the instructional leader’s conducting action research and sharing his or her experience of action research with the staff?

Further research needs to be conducted on the impact that teachers’ metacognition has on student achievement. What are the effects of teachers’ metacognition on student achievement? Are teachers who conduct action research better enabled to recognize and foster metacognitive development in their students?

Additionally, the limitations of this study provide a basis for further research. This study was conducted on-site in an elementary school in a collaborative group of teachers to whom each was familiar. What impact would action research have on teachers in secondary and higher education? What would be the impact of conducting action research with teachers who were not as familiar? What is the metacognitive impact of action research when it is conducted in isolation versus being conducted in a collaborative group?

Implications for Principals

The findings of this study have implications for principals. Instructional leaders must provide and encourage teachers to pursue professional development opportunities which have been shown by research to have a positive impact on teacher development (Blase & Blase, 2003; Sergiovanni & Starrat, 1998). This study demonstrated that teachers felt that action research supported the ways that adults learn best, it was hands-on and immediately applicable, and it encouraged them to be reflective thinkers regarding their teaching. Because of these and the additional positive effects which teachers perceived to the development of their metacognitive self-regulating, their feelings of empowerment, and the corresponding increases in student achievement, principals should consider creating environments which promote action research as a means of fostering instructional improvement.
An environment which promotes action research is one which promotes a community of inquiry and encourages teachers to grow as reflective professionals (Glanz, 2005). Such an environment which encourages the growth of teachers as inquiring and reflective professionals is one in which risk-taking, inquiry, and critical thinking thrive (Ross & Hannay, 1986). Principals can provide many of the critical supports to such a community by embracing action research as a component of both instructional supervision and professional development.

Instructional supervision which is based on collaboration, participative decision making, and reflective practice is at the foundation of school improvement efforts which are designed to promote teaching and learning (Glanz, 2005). Action research can be an important form of instructional supervision that encourages teachers’ reflective practices regarding effective teaching strategies. Action research can also be promoted by instructional supervisors as a way to examine methods of teaching that positively influence student achievement (Glanz, 2005b). Instructional leaders can promote action research as component of instructional supervision by using action research as a component of conferencing, as an extension of the clinical evaluation cycle, or as a part other formative evaluation discussions.

Principals can also promote action research by encouraging it as a component of on-site professional learning. Instructional leaders should plan staff development opportunities for teachers based on their current needs (Joyce & Showers, 1995), and action research provides a way to individualize professional development to the current needs of teachers (Husby, 2005). As classroom teachers have a key role in increasing school effectiveness, a critical role of instructional leaders is to increase teacher understanding of effective instructional strategies by facilitating teachers’ abilities to regulate their own instructional strategies (Glanz, 2005). Once
teachers have been instructed to conduct action research, they can self-direct their professional
development based on their current needs (Husby, 2005).

Implications for Higher Education

Action research is taught in teacher education programs at some colleges and universities. However, as the field of instructional supervision has not embraced action research as a method of fostering instructional improvement (Glanz, 2005), colleges and universities which meet with in-service teachers for graduate or continuing education have a heightened role in promoting action research for in-service teachers. Courses for in-service teachers should focus on sharing the benefits of action research with participating teachers, and should also encourage teachers to conduct action research in their own classrooms. This would be beneficial to teachers because (a) the content focus of the class would be embraced and applied by the teachers when they conducted action research regarding the course topics, and (b) teachers could experience the benefits of action research first-hand, so that they would be able to extend and apply the action research process when other problems arise in their classrooms.

Implications for Professional Learning

The findings of this study have implications that should be taken into consideration when planning professional learning opportunities. Individuals in the field of professional learning should support and encourage on-site collaborative action research groups. Providing incentives such as credit for professional learning courses could encourage such beneficial teacher research. Such promotion of action research on-site would also embrace what we know about adult learning and experiential learning, as adults experience satisfaction, a sense of ownership, and an enthusiasm for learning when they can select their own topics and when the learning is immediately applicable to problems that they are facing in the classroom.
Additionally, those conducting professional learning courses could assist teachers in applying the topics of courses by integrating action research projects into the traditional professional development courses. Instructors’ inclusion of action research with the topics presented would allow teachers to have practical application of the presented material to real life situations in their classrooms. Teachers would participate in “hands-on” learning related to the topics, and they would also be immersed in the action research process so that they could replicate the action research process when other problems arose in their classrooms.

Also, professional learning opportunities for instructional leaders should encourage instructional leaders’ understanding of the benefits of action research for teachers, as well as provide instructional leaders with opportunities conduct their own action research. In addition to having a tool to solve problems at the school level, instructional leaders could also derive metacognitive benefits from action research.

**Implications for Teachers**

The findings of this study have implications for teachers. The teachers in this study noted that while action research was an investment of their time, the benefits were worth the invested time. The teachers benefited through improvements in their teaching strategies, confidence, and improvement to their students’ achievement. This study demonstrated that teachers experienced enjoyment from being able select their own topics and from finding solutions to problems they had in their classrooms. They enjoyed being able to immediately apply their learning to their classrooms. The teachers also shared thoughts about the beneficial role that reflection had for them in reviewing their teaching skills, identifying problems, and noting progress and achievements. Not only did teachers benefit from the activities presented by the action research process itself, but they noted increases in their self-verbalization about their abilities to self-
regulate. These benefits extended beyond the initial action research process and provided teachers with confidence to act on their ideas and influence their teaching.

Teachers can conduct action research independently, but they can also work in small study groups to participate in collaborative action research. Teachers can take classes from universities or professional learning when it is available. Teacher leaders can conduct action research and share the benefits of such research with other teachers and school leaders as a way to increase school and district level support of action research. These teacher leaders could share the benefits that they derived personally from conducting action research as well as the benefits which the students derived through the corresponding increases in student achievement.

Implications for Policy Makers

Findings from this study have implications for policy makers. Educational policy makers influence reform movements. Their perceptions of teacher effectiveness often influence the direction of these reform movements. While past reform movements have focused on poor teacher performance and have correspondingly attempted to improve teaching by imposing mandates for teacher development and accountability, educational reform efforts have begun to focus on action research as a way of promoting student achievement (Sardo-Brown & Welsh, 1995).

While encouraging teachers to conduct their own research to impact student achievement has many advantages, some problems exist with the manner in which it is sometimes mandated. When action research is not instructed and modeled to teachers, they often experience frustration when trying to conduct action research in isolation (Sardo-Brown & Welsh, 1995).

When mandating action research, policy makers need to ensure that teachers are being instructed correctly and that opportunities for collaboration are supported. Pre-service work
should be encouraged when possible, and professional development or university classes along with mentoring should be available for in-service teachers when they conduct action research initially. To assist with the instruction of action research, school leaders should be immersed in the process of action research and should be supported when encouraging teachers’ conduction of action research.

Policy makers are moving in the right direction by encouraging action research in reform efforts. Teachers should be encouraged to investigate problems which are applicable to their daily practice, but policy makers should ensure that teachers and educational leaders are provided with this support for proper implementation.
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APPENDIX A

PROBLEM OF STUDY

FLOW CHART
Problem of Study Flow Chart

Student achievement is low, as approximately only 30% of all students meet proficiency nationally (NCES, 2005).

Instructional leaders must facilitate programs necessary for instructional improvement (Blase & Blase, 1998; Glanz, 2005).

Educational leaders must promote professional learning activities which are supportive of how adults learn best (Brookfield, 1986; Knowles, 1984; Mezirow, 1990).

Adult Learning Theory states that adults learn, retain, and use what is relevant to their professional needs (McGregor, 1998).

Experiential Learning, learning from practice, requires learners to think critically about the meaning of real world experience (YORK-BARR, 2001).

Reflection on teaching increases teacher awareness by leading teachers to question and make improvements regarding teaching.

The activities of action research support the research on adult learning theory, experiential learning, and reflection.

PROBLEM: Action research is not being embraced by the field of instructional supervision as a method to foster instructional improvement. (Glanz, 2005).

Additional benefits of action research need to be demonstrated so that action research will be promoted more frequently by instructional leaders.

Adult Learning Theory shares commonalities with metacognition (Roth, 1996). Successful learners use range of metacognitive skills

The experiential learning cycle prompts metacognition, or the thinking about thinking (Henton, 1996).

Reflection is a basis upon which the actions of metacognitive self-regulation are based (Hartman, 2001).

Metacognition and action research share commonalities of adult learning theory, experiential learning, and reflection.

Metacognition is beneficial to teachers during planning instruction, monitoring instruction, and assessing instruction (Hartman, 2001).

This study seeks to examine teachers perceptions of the impact of action research on metacognitive growth. If a connection is demonstrated, then instructional leaders would have an additional incentive to encourage action research as a method of fostering instructional improvement.
APPENDIX B

ACTION RESEARCH COURSE SYLLABUS
Action Research
Meeting dates/topics

Date: Monday, November 28  2:45-3:45

Topic: Introduction to Action Research

Reading: Chapter One

We will discuss the action research process, the benefits of action research, and overview the activities for the course.

Date: Monday, December 11  2:45-3:45

Topic: Finding a focus

Reading: Chapter Two

We will talk about ways to choose your own focus for your project. You do not need to have identified your focus, but this meeting will help you begin the process.

Activity to begin: Two weeks/10-15 minute per day journal writing. Use the “Journal Analysis Form” (page 22) to help you identify and select a focus.

Date: Monday, January 22  2:45-4:45

Topic: Refining the focus; Building a data-collection plan

Reading: Chapter 3; Chapter 7

We will participate in partner interviews to help you further your focus/discuss your area of interest. We will then further our focus to identify your specific questions and how you will measure your/your students’ growth. We will work collaboratively during this session so that you leave with a focus for your project and data collection methods. We will also collaborate regarding resources that might be useful to you when working on your individual projects. You will begin your project after this meeting.

Date: Monday, March 12  2:45-4:45

Topic: Analyzing the data

Reading: Chapter 8

We will work in collaborative groups to look at the data that you have gathered regarding your research question. How is your project coming? What questions do you
have? What do you feel that you are learning about your topic/students related to your topic?

Dates: April 16- May 11 (Schedule a one-hour chat-time)

Reading: Turning Findings into Action Plans, Chapter 9

Complete a reflective summary about your project. We will discuss this during your review time.