Fall 11-14-2012

IMPROVING STUDENT LEARNING: EXAMINING THE TEACHER KNOWING-DOING GAP

Gary S. Nunnally
University of Nebraska-Lincoln, nunfam5@gmail.com

IMPROVING STUDENT LEARNING:

EXAMINING THE TEACHER KNOWING-DOING GAP

By

Gary S. Nunnally

A DISSERTATION

Presented to the Faculty of

The Graduate College at the University of Nebraska

In Partial Fulfillment of Requirements

For the Degree of Doctor of Education

Major: Educational Administration

Under the Supervision of Professor Larry L. Dlugosh

Lincoln, Nebraska

December, 2012

IMPROVING STUDENT LEARNING:

EXAMINING THE TEACHER KNOWING-DOING GAP

Gary S. Nunnally, Ed.D.

University of Nebraska, 2012

Advisor: Larry L. Dlugosh

Research literature is full of research-based instructional strategies that highly effective teachers utilize on a consistent and systematic basis. And, it is well known that in multiple fields there exists a gap between what people know and what they actually do, commonly referred to as the knowing-doing gap. This study sought to examine whether this same gap exists in the field of education. In other words, this study sought to describe what high school mathematics, science, English, and social studies teachers know about effective instructional strategies and what they actually do in their classrooms.

The researcher reviewed studies, books, journal articles, and other professional literature in order to identify what the most effective teachers know and ostensibly should do in their classrooms. The result was the identification of ten highly effective instructional strategies: learning objectives, accessing prior knowledge, delivery of new declarative information, delivery of new procedural information, application of new information, summarizing or generalizing, note taking, comparing similarities and differences, providing reinforcement or recognizing effort, and cooperative learning or small group work.

From these ten strategies, the researcher developed a web-based survey designed to measure all ten of these strategies. High school mathematics, science, English, and social studies teachers were invited to participate in the study. From the survey three teachers expressed a desire to complete a follow-up interview and of those three, two completed the interview.

The results indicated that there may be a gap between what teachers profess to know and what they actually do in their classrooms. Given these findings of what teachers know and what teachers do, the researcher recommends that teacher preparation courses, educational service units, and district level professional development focus on efforts to help close the teacher knowing-doing gap, and ultimately improve student learning.

Acknowledgements

I believe that each of us has become who we are because of the influence of those around us. I am truly blessed with the people that God has brought into my life. I also understand there is no way I would have completed this doctoral work without the support of so many.

First and foremost, I want to thank God for life and for all of the gifts and abilities you have chosen to give me. I don't deserve any of it. I want to thank my bride of more than twenty years, Melanie, for sticking with me and believing in me as we have continued seeking God's plan for our lives. I know what it means to have "married up" – there is no man more fortunate than I am. I want to thank my children, Joshua, Elizabeth, and Isaiah – every day you remind me why there is no more noble work than that of an educator. You also remind me there is no greater joy than that of a father being a part of his children's lives – you are my three greatest accomplishments and every day you make me proud.

I want to thank Dr. Phil Warrick for encouraging me to begin this journey. You saw something in me and challenged me to think beyond my own classroom.
Dr. Zach Kassebaum, you have been a friend that is truly closer than a brother. On multiple occasions you have sacrificially come alongside me, and for that friendship my family and I are forever grateful. I also want to thank Dr. Janie Pollock for challenging me to examine my own classroom practices and make changes to my pedagogy that completely transformed my classroom – I would not have spent twenty years in the classroom if it were not for your influence.

There were multiple others who made this journey possible and I know that I am missing many of you. However, I would be remiss not to mention Dr. Miles Bryant, Dr. Toby Boss, Dr. Bill Heimann, Tim Bohlke, Dr. Anthony Clarke, Lisa Graham, Tara Bohaboj, Cindy DeRyke, Russ Uhing, Sue Cassata, Dr. Jed Johnston, student teachers Caitlin Clarke and Andrew Placke, the administration and staff of District #145, and my doctoral committee: Dr. Jody Isernhagen, Dr. Susan Wunder , Dr. Don Uerling, and Dr. John Hill.

Last, to Dr. Larry Dlugosh, my advisor, committee chair and friend: Thank you! You continued to challenge me and believed in me throughout this process. Never once did I doubt your belief in me and as a result your confidence in me spurred me on! Words cannot express how fortunate I am that a few years ago you agreed to take me under your wing and mentor me through this process. You are an educator in the truest sense of the word.

TABLE OF CONTENTS

List of Tables

List of Figures

List of Appendices

Chapter One

Introduction to the Study

A visitor in most Nebraska schools could expect to encounter a wide variety of teaching styles and effectiveness. It would not be uncommon to note a variation in teaching skill and classroom climate. If one could examine educational outcomes, the variations in classrooms might yield differences in student results. Perceptions of these differences through past experiences and teacher reputations cause many parents of school children to begin each fall beset by a sense of urgency to see "what teacher" their child has.

Intuitively one understands that it is "the teacher" who makes the difference in the year ahead for a child, and research bears this out (Danielson, 2007; Marzano, Pickering, & Pollock, 2001; Pollock, 2007; Schmoker, 2006; Stronge, 2002; Wood, 2007). Research demonstrates that it is the teacher who makes the difference for individual school children. We must examine the essential elements for effective teaching and, more importantly, consider why all teachers are not equally effective and what barriers stand in the way of improving the effectiveness of all teachers.

Purpose of the Study

The purpose of this mixed-methods study was to examine what high school mathematics, science, English, and social studies teachers know and do. In other words, this study is an examination of teachers' knowledge of instructional strategies and what they actually do with that knowledge in their classrooms. Research has shown that educational achievement and economic success are closely tied together (Nicolaidis & Michalopoulos, 2004). The benefit of a quality education cannot be overstated. With

tighter budgets, limited resources, and increasing accountability, schools will continue to receive more scrutiny with regard to their funding and the results they are achieving with students. With research clearly showing the importance of the individual teacher in improving student learning (Danielson, 2007; Marzano et al., 2001; Pollock, 2007; Schmoker, 2006; Stronge, 2002; Wood, 2007), it is important to find out what must be done to help all teachers improve their use of instructional strategies and consequently to help improve the learning of all of their students. Some have reasoned that in order to improve the professionalism and effectiveness of teachers, teachers must have a clear example of what they are expected to know and to be able to do (Geerinck, Masschelein, & Simons, 2010).

Undergraduate programs, as well as graduate programs, district-level support staff, administrators, and staff development professionals all dedicate resources to improving the performance of individual teachers and their use of instructional strategies. The purpose of this mixed-methods study is to research what teachers know about effective instructional strategies and what they actually do in the classroom, and ultimately what can be done to improve student learning. By increasing clarity about whether there is a "knowing" gap or a "knowing-doing" gap in high school education, resources can be better allocated. Thus, this mixed-methods study seeks to discover what teachers do and do not know about the use of effective instructional strategies and what they actually do in the classroom.

One of the difficulties of this study lies in the problem of combining the art and science of teaching. Scientifically, certain strategies have been shown to improve student learning when used consistently and systematically (Hattie, 2009; Marzano et al., 2001).

However, another issue that presents itself is the problem that not all educators will necessarily use the same language. One teacher might start class with a bell activity, another with anticipatory set, and another with accessing prior knowledge. While all of these strategies serve the same purpose (getting the learner ready for new learning or today's lesson), not all teachers use the same terminology.

Furthermore, I distinctly remember my sophomore English teacher Eli Zietz. Mr. Zietz did not access prior knowledge prior to beginning a lesson, nor did he vary the level his assessments. But he did teach me how to write. And he would not accept my writing until I had re-written multiple times and my writing had met his standard for an "A." I credit Mr. Zietz with giving me the writing skills that got me through college. While some students may have looked at his standards as being punitive, I accepted his feedback as credible and worked hard to improve my performance. Mr. Zietz was a highly effective instructor but not necessarily deemed effective according to the standards of the survey used for this project.

Lastly, we needed to examine where teachers acquired their knowledge of instructional strategies, to what extent do teachers utilize the knowledge they possess, and how do individual teachers test the efficacy of their practices? Many teachers test the efficacy of their practices intuitively. For instance, I try something and it does not work, so I try something else. Or I try something and it seems to work, so I keep doing it. For other teachers feedback on the effectiveness of their teaching might come from a colleague's informal observations or a supervisor's formal evaluation.

Statement of the Problem

Literature that focuses on improving student learning (Hattie, 2009; Marzano et al., 2001; Pollock, 2007; Schmoker, 2006), as well as on effective teaching qualities (Danielson, 2007; Stronge, 2002) is abundant. Furthermore, leaders in most school districts understand the contribution of effective teachers and teaching to student learning; therefore, these leaders from school districts around the nation have allocated a significant amount of resources to improve their teachers' pedagogy, including the use of instructional strategies, and hopefully teacher performance, in an attempt to ultimately improve student learning. Many educational leaders would agree that there are certain fundamental skills and teaching knowledge that effective teachers possess.

According to Stronge (2002, p. viii), "Commonalities highlighted in Qualities of Effective Teachers include characteristics of the teacher as an individual, teacher preparation, classroom management, and the way a teacher plans, teaches, and monitors student progress." Robert Marzano and his colleagues (2001) asserted that the most effective teachers systematically utilize nine instructional strategies, commonly referred to as the "Marzano 9." Stronge and Hindman argued for the importance of hiring the best teachers, stating "Administrators, other teachers, parents, and students know what it feels like to work with an effective teacher. The classroom has routines and procedures to ensure that it runs smoothly. The students know that the teacher genuinely cares about them, not only as a class but also as individuals. The teacher possesses a command of the curriculum content, matches strategies and resources to learners' needs, and creates a motivating learning environment built on trust and respect (Stronge & Hindman, 2003). In *Improving Student Learning One Teacher at a Time* (Pollock, 2007), Janie Pollock

claimed that the most effective teachers consistently and systematically utilize the "Big 4," which includes establishing and using clear learning targets, effective instructional strategies, varied assessments, and grading and record keeping tied back to the learning targets. Additionally, Charlotte Danielson (Danielson, 2007) created a framework for effective teaching in order to describe what effective teachers should be able to know and do. This framework includes 22 components organized under four domains.

These various strategies and frameworks are research-based and have been shown to improve student learning. It would be fair to say that teachers who consistently and systematically utilize these strategies would likely improve the learning of their students. However, there appears to be a so-called knowing-doing gap that persists**.** Reeves (2009) called this gap "the implementation gap." Reeves contended that schools know what needs to take place in order to create effective classrooms but have failed to have these strategies implemented throughout their classrooms. Reeves reasoned that these research-based, instructional strategies have had little impact because teachers do not understand what they are expected to do, teachers do not receive the support necessary for sustained change in teaching practice, and teachers are not held accountable for consistent, effective use of good teaching practice. In fact, Marge Scherer interviewed researcher Robert Marzano regarding the implementation of using standards as a part of instructional strategies. Marzano stated "This is going to sound negative, but I don't think that teachers across the United States are implementing standards. Surveys about standards implementation usually boil down to asking teachers to verify whether or not they *cover* content that is specified in the state documents (Scherer, 2001). One effort at

addressing the concern of teachers and school districts making actual instructional changes has come from ADVANC ED (Breakthrough School Improvement, 2005).

Discerning whether a knowing or a knowing-doing gap exists is not an easy task. Shulman and Shulman (2004) described this challenge when they wrote, "We can describe teachers who are ready to engage in the constructivist (or other forms of highly engaged) teaching, but lack the will, the knowledge, and the skill to do so. We worked with teachers who possess the understanding of the principles, but lack the will to pursue them or the skill to implement them. We can even imagine teachers who have the requisite skills, but lack an understanding of their purpose of rationale, are unwilling to apply them, and are uninspired by a vision of education in which they are central. We can certainly conceive of those who possess all of the individual capacities, but lack membership in the kind of teacher community that makes possible the transformation of intention into accomplishment" (p. 260).

A knowing-doing gap (Blanchard, Meyer, & Ruhe, 2007) would exist if a teacher was trained in various, proven effective strategies and was competent in integrating them into the classroom, yet for whatever reason, failed to implement them into the classrooms. We could argue that the knowing-doing gap is actually an implementation gap.

In *Know, Can, Do*, Ken Blanchard and colleagues (2007) summarized that this gap exists for three main reasons:

1. Too much knowledge, or information overload.
2. Too much negativity, or an inadequate filtering system.
3. Bad habits, or an inadequate learning system

In summary, it is much easier to go read a book, ready a journal article, or attend a staff development session than it is to change your teaching habits!

This spring I taught my student teacher a new strategy for eliciting responses from students. It was a strategy I had picked up at a staff development session. This particular strategy called "Interaction Sequence" involves three steps. The first step is to walk around the room as students are carrying on small-group discussions. As the instructor hears quality responses, the particular student who came up with the quality response is asked if he or she would be willing to share his or her response out loud with the entire group. So when the small group discussion is completed and the teacher has the attention of the entire class, two or three students are called on to give their quality responses. Second, students are randomly called on to give their responses. And, if a randomly called on student is not able to come up with their own response, they are asked to share with the class the best response they have heard so far. Thirdly, the teacher asks if there are any volunteers who would like to share their responses.

I taught my student teacher this three-step process that I had learned at a staff development session, and then I modeled it for her on Monday when I was teaching a class that my student teacher was not yet teaching. The following day my student teacher was eliciting responses from students after small group discussion when she reverted back to her old habits and merely asked for volunteers to respond. I consider my student teacher to be highly effective, eager to learn and eager to please, yet she had still reverted back to old habits. I followed up the class discussion with a brief reminder to her and by third period, she was effectively using the new strategy.

But what if the problem of creating and implementing effective classrooms was not a knowing-doing problem? What if the problem was a knowing problem? (The knowing-doing gap implies one or the other could be missing.) In the case of a knowing-doing gap, we assume that teachers possess the requisite declarative knowledge to create an effective classroom. The knowing-doing gap focuses on the problem of teachers doing what they perceive is effective. But what if the problem of creating an effective classroom was a lack of knowledge? Or, to put it another way, what if teachers do not necessarily know why they do things the way they do them? What if teachers have not figured out the educational reasons for their behaviors as educators? Kolis and Dunlap (2004) asserted that "Good teaching is ultimately deeply and thoroughly grounded in knowledge" (p. 97). Further, Kolis and Dunlap argued that this knowledge base has grown exponentially over the past ten years and now includes multiple intelligences, learning styles, brain-based learning, and constructivist learning theory.

Every new school year brings a new set of students. In some cases, the new year is a fresh start for students and teachers alike and, in some cases the new year brings a new set of problems and challenges. What worked last year for one student may or may not be the best strategy for another student. However, is there a set of strategies, a playbook of practices, that when utilized in a calculated and strategic way consistently improves learning for ALL students? Or, does effective teaching require more than just a tool bag, and instead it also includes knowing adolescents and being well versed in your content area?

Shulman and Shulman (2004) reasoned just that; effective teaching is much more than a series of strategies. The authors suggested that knowing your content area is

extremely important for effective educators. In fact, beyond pedagogical knowledge (PK) there is something called pedagogical content knowledge (PKC); teachers have to know not only how to teach, but also how to teach their specific content (Abell, 2008; Daw, 2000; Hashweh, 2005; Loughran, Mulhall, & Berry, 2008; Segall, 2004).

Pollock (2007) claimed that this is precisely the reason that teachers must work to obtain pedagogical automaticity. That is, the science of teaching becomes so automatic that the instructor can then focus on the particular content and individual students. In *Art and Science of Teaching*, Marzano (2007) echoed these thoughts by saying "the learner can execute the process without consciously thinking about the parts of the process." This is called the autonomous stage (p. 61). In *Leader to Leader*, Blanchard and colleagues (2007) supported these thoughts when he stated;

> Mastering the learning process is important, Ken pointed out, because people who have mastered learning are free to be creative and make big things happen. Power, freedom, and autonomy come from having both the mindset and the skill set to achieve extraordinary results. (p. 62)

Prior to becoming a classroom teacher, an individual must complete a college program, successfully complete student teaching experiences, and obtain a teaching certificate from the state in which he/she will teach. While many would argue that state certification has little to do with job preparation, all of these experiences and accomplishments are nonetheless assumed to prepare individuals for life as a classroom teacher.

What if the college courses and student teaching experiences or school level staff development do not adequately provide the necessary training for the individual to become a teacher who can create an effective learning environment for his/her students? And, there is in fact research that suggests that teacher preparation courses and the

student teaching experience is not adequate preparation (Black & Halliwell, 2000; Hallett, 2010; Korthagen, 2010; Shulman, 1998; Starnes, Saderholm, & Webb, 2010). Also, it is important to remember that no teacher can always create an effective environment for all students.

However, if teachers know what to do to create lesson plans with proven instructional strategies in order to create an effective learning environment and they are not doing it (knowing-doing gap), then the remedy is much different from the knowing gap when teachers do not even have the declarative knowledge necessary to create an effective classroom. Certainly there are a myriad of complex reasons why certain teachers are less effective than others. Besides a lack of undergraduate training or district-level staff development, some teachers may be burned out and even though they know what to do, they lack the energy to do it. Maybe the teacher works in a caustic environment where the school and/or culture of the school discourages initiative and individuals attempting to implement innovative ideas. Lastly, teachers could be working in a culture where teachers fear that taking risks might damage their future employment or the somber reality that in public education today, there is little motivation for teachers to take risks and innovate.

When discussing the concept of knowing, psychologists refer to the idea of "certainty of knowledge." In *On Being Certain: Believing You Are Right Even When You're Not*, Burton (2008) claimed that certainty is a mental state rather than evidence of fact. Burton examined the relationship between our thoughts and what we actually know and challenges us with the notion that what we "know" or "think we know" may just be a feeling and not really true at all. For example, Burton described the "Challenger Study"

(p. 10) where students were asked to write down facts about the space shuttle explosion. Two and a half years later, they were asked to answer the same questions and a full 25% of the responses were strikingly different with regard to basic facts, such as how they heard about the explosion, where they were, etc. Given this phenomena, it would be reasonable to expect that some teachers will "know" that they have a certain degree of pedagogical knowledge, but in fact they may not. Likewise, some teachers may lack certainty, but may in fact be more effective teachers than those who are absolutely certain they have the pedagogical knowledge to create an effective classroom.

Given the central purpose of student learning in all of our classrooms, the varied effectiveness of individual teachers, the varied results of staff development training and the unquestioned importance of the individual teacher in improving student learning, this mixed-methods study examined whether or not teachers know what to do to create an effective classroom. In other words, the central question for this study is do high school mathematics, science, English, and social studies teachers have the necessary knowledge of instructional strategies in order to create an effective learning environment and to what extent do they actually use the knowledge they have?

Background

In the past ten years, hundreds of schools across this country have failed to meet Adequate Yearly Progress (AYP) as stipulated by No Child Left Behind (U.S. Department of Education, 2002). Consequences for failing to meet AYP have included complete takeover or shutdown of entire school districts. Regardless of whether or not NCLB continues (there have been credible calls to repeal NCLB), school districts around the country with limited resources and tight budgets are demanding results from

their teachers and students. Given this increased accountability and dire consequences for ineffective teachers, schools, and entire school districts, there is a need to measure why some teachers are more effective than others and what can be done to effectively improve the use of instructional strategies of all teachers.

Various research (Danielson, 2007; Marzano et al., 2001; Pollock, 2007; Schmoker, 2006; Stronge, 2002) has shown that the classroom teacher is uniquely positioned to improve student learning and consequently help his/her schools make gains in closing the achievement gap. The most effective teachers who consistently and systematically utilize research-based best practices (Marzano et al., 2001) will most likely effectively improve the learning for all of their students.

If we accept the premise that some teachers are more effective than other teachers, (the "doing" part of the equation), the burning question becomes "why are some teachers more effective than others?" Do these highly effective teachers have more knowledge about instructional strategies than less effective teachers? Likewise, do less effective teachers have the same knowledge about instructional strategies as more effective teachers, but fail to use it in the classroom consistently and systematically?

When considering effective teaching, it is important to evaluate whether it is because some teachers have superior declarative knowledge about instructional strategies or they have successfully implemented this knowledge in their individual classrooms. Pfeffer and Sutton (2000) referred to this as the difference between knowing and doing. This perceived "gap" exists in multiple fields (Knight et al., 2007).

If in fact this gap between what teachers know and what teachers do, exists in education, then ultimately why does it matter? In *Visible Learning*, John Hattie (2009)

identified in his meta-analysis that "approaches to teaching" have a much larger effect size for improving student learning than "teacher subject knowledge." Given this research, it would seem very important to focus on pedagogical, declarative knowledge, including the use of instructional strategies as opposed to more knowledge in specific subject areas.

Declarative knowledge would include effective instructional strategies such as the "Marzano 9" (Marzano et al., 2001). Declarative knowledge could also include "The Big 4" (Pollock, 2007)

1. Use of clear instructional targets/learning objectives (curriculum)
2. Delivery of new information (declarative and procedural)
3. Assessing to the targets/learning objectives
4. Grading, record-keeping and reporting back to the targets. (p. 8)

In addition, declarative knowledge could include effective lesson design as detailed by Pollock (2007) in *Improving Student Learning One Teacher at a Time*:

G – Goal or learning objective
A – Accessing prior knowledge (or anticipatory set, bell activity, etc.)
N – New information
A – Application of new information
G – Generalization or summary. (p. 64)

Furthermore, in *Enhancing Professional Practice,* Charlotte Danielson (2007), provided a "framework for teaching" that could be considered declarative knowledge. Danielson detailed four domains for professional practice, including planning and preparation, the classroom environment, instruction, and professional responsibilities. In addition, under the domain of instruction, Danielson detailed five different components, including communicating with students, using questioning and discussion techniques, engaging students in learning, using assessment in instruction, and demonstrating flexibility and responsiveness.

Likewise, Madeline Hunter's Lesson Model has long been a staple of undergraduate teacher preparation courses. Hunter's seven elements of planning for effective instruction (1994) includes the following seven steps:

1. Learning Objective
2. Anticipatory Set
3. State the lesson objective
4. Input
5. Checking for Understanding
6. Guided Practice
7. Independent Practice. (p. 87)

However, in *Professional Learning Communities at Work: Best Practices for Enhancing Student Achievement,* DuFour and Eaker (1998) contended that

> If schools are to be transformed into learning communities, educators must be prepared first of all to acknowledge that the traditional guiding model of education is no longer relevant in a post-industrial, knowledge-based society. Second, they must embrace ideas and assumptions that are radically different than those that have guided schools in the past. (p. 15)

In other words, our focus has to change from the factory model where schools continue to focus on procedures to schools as learning communities where the focus is student learning and the continual improvement of that process.

In this type of school/classroom statements clarify:

1. what students will learn,
2. what students are learning, and
3. how the school (the teacher) will respond when students do not learn.

Defour and Eaker's (1998) thoughts on changing the focus from schools focusing on procedures to schools focusing on student learning seems to align with Marzano's and Pollock's work, albeit that certainly some educators are effective at helping their students learn but do not use the same strategies and/or the same terminology. Also, Defour's

work seems to be in contrast with the trend toward "highly scriptive" lessons where there is no variation or autonomy in a lesson plan.

A discussion of improving student learning would not be complete without a discussion on motivation. In *Drive*, Pink (2009) argued that the secret to satisfaction and high performance is autonomy, mastery, and purpose. Ultimately the highest performers in any profession are not motivated by external rewards, but by the "need to direct their own lives, to learn and create new things, and to do better by ourselves and our world" (p. 10). Given the importance of motivation in any human endeavor and the difficulty of aligning research-based, best practices with teacher autonomy, one can begin to see the intricacies in the teaching profession.

Research Questions

The purpose of this study was to examine whether or not high school mathematics, science, English, and social studies teachers have the pedagogical knowledge about instructional strategies to create an effective classroom, and to what extent do they use this pedagogical knowledge? The sub-questions revolving around creating an effective classroom environment included:

1. What declarative pedagogical knowledge do teachers possess?
2. Where did teachers acquire their pedagogical knowledge (teaching tool kit)?
3. What declarative pedagogical knowledge are teachers missing?
4. Is there pedagogical knowledge that teachers are missing that they would like to acquire?
5. To what extent do teachers utilize the pedagogical knowledge they possess?
6. How do teachers test the efficacy of their practices?

Method

This mixed-methods study examined the pedagogical knowledge about instructional strategies that high school mathematics, science, English, and social studies teachers possess about what they must do to create an effective classroom and what they are actually doing in their classrooms on a consistent and systematic basis.

Definitions of Terms

Apply—Using information in a new and meaningful way.

Consistent—Regular.

Cooperative learning—A group of students working together.

Criterion-based feedback—Information or feedback given to students based on specific standards.

Cues, questions, and advance organizers—One of the "Marzano nine." This strategy involves helping students think about new knowledge before experiencing it.

Curriculum—A blue print for learning.

Declarative knowledge—Facts and information.

Generating and testing hypothesis—According to Marzano (2001), this includes systems analysis, problem solving, historical investigation, invention, and experimental inquiry.

Generalization—Another term for summarizing.

Homework and practice—Opportunity for students to practice their skills and deepen their understanding of material already presented.

Identifying similarities and differences—Process of identifying similarities and differences between or among things or ideas.

Instructional strategies—Methods used by teachers to help the learner learn the information.

Learning—The process of acquiring new knowledge and skills.

Master learner—Taken from *Improving Student Learning One Teacher at a Time*, Pollock (2007)

> One salient lesson we learned from the standards movement of the 1990's was that if we wanted to improve students, we had to make students –so the school, not the leadership, not the teachers-the focus of improvement. Therefore, the Teaching Schema for Master learners (TSML) argued for teaching so that students learn to retain information for longer periods of time and can, consequently, remember and apply the information or the procedure. (p. 64)

Note Taking—Students make a determination as to what is the most important information and write it down in their notebooks in a way that is useful to them.

Nonlinguistic representations—generating mental pictures and creating graphic representations of information.

Pedagogy—In *Classroom Instruction that Works*—Marzano et al. (2001) described effective pedagogy as encompassing three areas: the instructional strategies used by the teacher, the management techniques used by the teacher, and the curriculum designed by the teacher.

Procedural knowledge—Skills and processes.

Setting objectives and providing feedback—Marzano et al. (2001) described goal setting as "the process of establishing a direction for learning."

Reinforcing effort and providing recognition—In *Classroom Instruction that Works*, Marzano et al. (2001) cited the psychologist Bernar Weiner "who popularized the notion that a belief in effort ultimately pays off in terms of enhanced achievement" (p. 50).

Summarizing—the process of deleting some information, keeping some information and combining/substituting some information in order to create a generalization.

Systematic—Thoroughly and regularly.

Varied classroom assessments—According to Pollock (2007), varying assessment includes deliberately teaching and testing for thinking. It also includes testing for different levels of learners-beginning, progressing, proficient, and advanced learners.

Assumptions

As a current high school social studies teacher teaching in a 9-12 high school that serves nearly 600 students, the researcher worked closely with his current district's administration as well as with the teaching staff. In addition, the researcher has conducted staff development training sessions for school districts throughout the United States as well as in Canada. As a current teacher and education consultant, the researcher understands well the impact that individual teachers can have on their classroom and their individual students (Marzano et al., 2001). Hence, the researcher made the assumption that individual teachers really do have varying abilities to impact student learning.

There were two primary assumptions made in this mixed-methods study. First, the researcher assumed that it is possible, based on the review of literature, to quantify the instructional strategies effective teachers possess. Further, the researcher assumed that the tool used for this study accurately drew out from teachers what they perceive they know about effective instruction and what they actually utilized in their own classrooms.

Second, the researcher assumed that not all teachers have the same pedagogical knowledge of instructional strategies necessary to create an effective classroom. This assumption came from the researcher still being in the classroom and working with other teachers in his school, as well as from the hundreds of teachers he has encountered and interacted with as he has trained various school districts around the United States and Canada.

Delimitations of the Study

Delimitations are used to narrow the scope of the study (Creswell & Plano Clark, 2007). The number of the participants was extremely small, given the fact that there are hundreds of thousands of high school mathematics, science, English, and social studies teachers around the country. Furthermore, the number of teachers who agreed to take the survey (33) and the number of teachers who agreed to participate in a follow-up interview (3) and the number of teachers who participated in the follow up interview (2) was small. For this reason, even though the researcher attempted to complete the study in such a way as to be able to generalize the results to the entire high school teacher population of the United States, the study is in fact limited to the participants of the study.

Limitations

The researcher acknowledges specific limitations of this study included the reliance on individual teachers willingness to complete the web-based survey and teachers willing to participate in a follow-up interview. Furthermore, the survey method was not psychomatic, but rather descriptive, and the descriptive study sought to measure perceptual data. That is to say that some teachers might perceive themselves to be highly effective when, in fact, they may not be. Likewise, other teachers may perceive

themselves to be marginally effective when, in fact, they are highly effective. Lastly, while there is significant research to support the effective teaching strategies cited in this paper, the researcher acknowledges that there may be highly effective teachers who do not use these strategies and/or use the strategies, but use different names in describing them.

Significance of the Study

Researchers Marzano, Pickering, and Pollock (2001) completed a meta-analysis of thousands of teachers and hundreds of thousands of learners in *Classroom Instruction that Works*. The research showed that the most significant factor affecting student achievement is the quality of the individual teacher and the instructional strategies that he or she uses consistently and systematically in an effort to impact student learning.

Summary

This mixed-methods study sought to clarify those areas in which undergraduate programs, graduate programs, and staff development can target their limited resources in an effort to improve individual teachers' pedagogy, specifically their use of instructional strategies, and ultimately improve student learning. By being clear about what teachers know and what they actually do, these same organizations can more strategically focus their resources in an effort to improve the identified deficits, and ultimately improve student learning. The importance and role of the teacher in improving student learning will be explained in the second chapter of this dissertation by way of reviewing the literature on this subject. The third chapter of this dissertation will provide an in-depth description of the methodology used for completing this study. The fourth chapter will

include an analysis of the results. The fifth chapter details a summary of the study, along with recommendations and recommendations for future research.

Chapter Two

Review of the Literature

The review of the literature included journal articles, studies, books, and professional literature to address the topic of study: what do high school mathematics, science, English, and social studies teachers know about effective instruction, and what do they actually do in their classrooms? The narrative is divided into four sections. The first section examines the literature on best practices with regard to effective pedagogy, including classroom instruction. The second section focuses on the knowing-doing gap in general. The third section reviews the literature on motivation and the change process. The fourth section provides a brief summary of the review of the literature.

Best Practices—Effective Pedagogy

In 1997, Jon Saphier and Robert Gower published their fifth edition of T*he Skillful Teacher*. This book is divided into four sections – Management, Instruction, Motivation, and Curriculum. Management includes attention, momentum, space, time, routines, and discipline. Instruction includes clarity, principle of learning, and models of teaching. Motivation includes expectations, personal relationship building, and classroom climate. Curriculum includes objectives, learning experiences, assessment, curriculum design, and overarching objectives. The authors presented that "teaching is one of the most complex human endeavors imaginable" (p. 3), and that skillful teachers are not born, but are in fact made. Saphier and Gower indicated that their book provides the pathway to building more skillful teachers.

Also in 1997, Linda Darling Hammond published *The Right to Learn: A Blue Print for Creating Schools that Work* (Hammond, 1997). According to Hammond,

student learning will be improved to the degree that teachers teach for understanding. In addition, Hammond stated that teachers and schools need to teach more in-depth, get rid of excessive bureaucratization, and focus on educational outcomes. A part of this process includes improving the profession of teaching (Hammond, 1997).

In 2001, researchers at the McRel institute published a book titled *Classroom Instruction that Works* (Marzano et al., 2001). This book was not a book about new techniques or new discoveries. Instead it was a meta-analysis of 30 years worth of studies that examined the effectiveness of nine instructional strategies including summarizing and note-taking, small group work, comparing similarities and differences, etc. Eventually these nine strategies would become known as the "Marzano nine."

In 2001, Richard Stiggins released *Student-Involved Classroom Assessment* (Stiggins, 2001). Stiggins detailed the importance of assessment in the instructional process. He reasoned that with proper assessment students will ultimately improve their learning. In fact, Stiggins argued that assessment is the critical piece in helping students to become life-long learners. He stated "as educators, our job is to teach ourselves out of a job. By this, I mean that we must take our students to a place where they don't need us anymore" (Stiggins, 2001, p. 509).

In 2002, author James Stronge released *Qualities of Effective Teachers*. According to Stronge, *Qualities of Effective Teachers* "chronicles the common background and identifies the common behaviors that characterize effectiveness in the classroom. Based on a comprehensive review and synthesis of research related to effective teaching, the book serves as a resource for teachers, administrators, and others

interested in improving the quality of teaching and learning in our schools." The book examined six key components of effective teaching.

1. Prerequisites of effective teaching, including teachers' background and professional preparation. According to Stronge, one key finding in the research is that "students taught by teachers with greater verbal ability learn more than those taught by teachers with lower verbal ability" (p. 4). In addition, "teacher certification status and teaching within one's field are positively related to student outcomes" (p. 7). Lastly, "teaching experience has up to a 30% beneficial effect on student academic performance" (p. 10).
2. The teacher as a person, including the role of caring, listening, understanding and knowing students. According to Stronge (2002), the research on the teacher as a person yields the following important points:
    a. Caring teachers who know their students create relationships that enhance the learning process. (p. 15)
    b. Effective teachers offer all students opportunities to participate and to succeed. (p. 16)
    c. Students indicate that effective teachers spend more time interacting and working directly with them than ineffective teachers. (p. 17)
    d. Effective teachers exude positive attitudes about life and teaching. (p. 20)
    e. Effective teachers may reflect on their work formally or informally; for example, they may review a day's work mentally, keep a journal or portfolio, meet regularly with a mentor or with colleagues, or assess a videotaped recording of their teaching. Regardless of the mode, the key is reflection. (p. 21)
3. Classroom management and organization – In this section, Stronge compares an effective classroom to a highly effective symphony with students engaged in the learning process. Sronge (2002) goes on to cite some key findings in the research:
    a. Effective teachers establish routines for all daily tasks and needs. (p. 27)

b. Effective classroom teachers resolve minor inattention and disruption before they become major disruptions. (p. 28)
c. Handling of routine tasks is prompt and efficient by effective teachers. (p. 29)
d. The effective teacher minimizes discipline time and accentuates instructional time. (p. 31)

4. Organizing for instruction – This section focuses on instructional planning from a year-long curriculum document all the way down to a daily lesson plan (Stronge, 2002). Again, the key findings from the research includes:

   a. Effective teachers see consistency and organization in their classrooms as important because they allow the central focus of classroom time to be on teaching and learning. (p. 34)
   b. Effective teachers follow a consistent schedule and maintain the procedures and routines established at the beginning of the year. (p. 36)
   c. High expectations are identified as a key component of student success. (p. 37)
   d. Effective teachers identify clear lesson and learning objectives . . . systematically developing objectives, questions, and activities that reflect higher-level and lower-level cognitive skills as appropriate for the content and the students. (p. 39)

5. Implementing instruction – Beyond a teacher's preparation, his/her relationships with students, and classroom management skills, this section focuses on what effective teachers do with the actual act of teaching. According to Stronge (2002), the research indicates that the most effective teachers:

   a. Are constantly searching for group instructional strategies that are as effective as on-on-one tutoring. (p. 43)
   b. Understand that techniques and instructional strategies have nearly as much influence on student learning as student aptitude. (p. 44)
   c. Understand that lecturing, a common teaching strategy, is an effort to quickly cover the material; however, it often overloads and overwhelms students with data, making it likely that they will confuse the facts presented. (p. 44)
   d. Cite high expectations for themselves and their students as a key part of their success. (p. 46)

e. Vary not only their own instructional strategies, but also the types of assignments and activities given to students to support increased student engagement. (p. 49)
f. Understand that successful student engagement has important affective benefits for students, as it encourages a more positive attitude toward school. (p. 49)

6. Monitoring student progress and potential – With the ever increasing pressure of high stakes tests, teachers must continue to find ways to check for individual student learning. Stronge (2002) cited the following keys obtained through the research:

    a. Homework is more effective in influencing student achievement when it is graded, commented on, and discussed in class. (p. 54)
    b. Effective teachers plan and implement good monitoring strategies by targeting questions to the lesson objectives. (p. 57)
    c. Effective teachers re-teach material to students who did not achieve mastery, and they offer tutoring for students who need or seek additional help. (p. 57)
    d. Effective teachers use a variety of grouping strategies, including cooperative grouping, flexible grouping, and ability grouping with differentiation to support student learning. (p. 58)

Stronge (2002) concluded his work by noting the difficulty of a cookie cutter approach to teaching. Certainly all of us can identify various teachers who are more effective than others. And most would agree that none of these effective teachers were exactly alike. Stronge says, "There is no single formula for classroom success. We can identify attributes, back-ground characteristics, and behaviors that contribute to success, but these are, in the final analysis, a general guide and not a prescription. Each teacher, in a unique classroom, and in a personal and unique way, must continuously strive to achieve" (p. 65).

In 2003, researcher and author Robert Marzano wrote *What Works in Schools: Translating Research into Action* (Marzano, 2003). Marzano asserted that there are three

levels of factors that influence student learning: School Level Factors, Teacher-Level Factors, and Student Level Factors. Marzano claimed that by implementing the strategies found in the book, students can vastly improve their learning, stating

> My premise is that if we follow the guidance offered from 35 years of research, we can enter an era of unprecedented effectiveness for the public practice of education-one in which the vast majority of schools can be highly effective in promoting student learning. (2003, p. 1)

Under "Teacher Factors," Marzano (2003) cited the familiar themes of:

1. Teacher-Level Factors
2. Instructional Strategies
3. Classroom Management
4. Classroom Curriculum Design

In 2003, assessment expert W. James Popham linked good teaching or effective instructional strategies with good assessment. Popham claimed that educators who understand the link between good teaching and good assessment can lead to a substantial increase in their instructional effectiveness. In writing *Test Better, Teach Better* (Popham, 200a3), Popham stated, "I want you not only to accept the idea that testing can help teaching, but also to act on that idea. I want you to pick up tangible instructional payoffs from linking your tests to your teaching. You'll teach better, and your students will learn more" (p.1).

In 2004, college professor and author Todd Whitaker published a book titled *What Great Teachers Do Differently: 14 Things that Matter Most* (Whitaker, 2004). Whitaker reasoned that there are certain beliefs, behaviors, attitudes, and interactions that our best teachers in our best classrooms do and that other teachers do not. Among other things, Whitaker reasoned that the best teachers ask themselves one central question

before making a decision or attempting to bring about change: "What will the best people think" (p. 91).

In 2006, David Sousa published *How the Brain Learns*; in which he asserted that educators are in the business of changing the brain every day. In addition, Sousa discussed the concept of "Primacy-Recency" which stated that learners will best remember what is delivered at the beginning of the lesson (primacy) while the second most opportune time for learning is at the end of the lesson (recency). In addition, Sousa went through step by step, explaining how the learner converts information into short-tem memory and ultimately long-term memory.

In 2006, Michael Schmoker released, *Results now: How we can achieve unprecedented improvements in teaching and learning*. In it, Schmoker contended that quality instruction is the largest single influence for raising student achievement. However, he took the argument a step further and suggested that there is a buffer between community stakeholders and teachers that keeps stakeholders from truly knowing how well teachers teach. Specifically, Schmoker stated

> The buffer prevents communities and school boards from knowing what or how well teachers teach, and from knowing how well (or if at all) leaders supervise instruction. In turn, the buffer ensures that building principals know very little about what teachers teach, or how well they teach. And yet these are the primary factors that affect everything dear to us: learning, and equal educational and life opportunities. (Schmoker, 2006, p. 6)

In 2007, researcher and author Dr. Jane E. Pollock published a book titled *Improving Student Learning One Teacher at a Time.* This book detailed research that shows specific ways teachers can improve student learning. Specifically:

1. Create a classroom curriculum document that's truly useful and incorporates robust concepts, generalizations, and procedures.

2. Plan instruction that's focused on helping students become master learners who can apply information and skills, not just do schoolwork.
3. Design varied classroom assessments that yield evidence of mastery and pinpoint where further instruction is required.
4. Use criterion-based feedback to improve individual student achievement and refine instruction.

According to the author, the "Big Four" may be the missing link teachers need to transform their pedagogy and achieve unprecedented levels of both student success and professional satisfaction, stating that "Now it it's just a matter of honing curriculum targets, planning instruction to those targets, and preparing a useful feedback mechanism in your delivery, assessment, and grading" (Pollock, 2007, p. 18).

In addition, Pollock (2007) detailed a simple, but effective lesson design known by the acronym GANAG. G is for the learning Goal, A for accessing prior knowledge, N for New information, A for Application, and G for Generalization or summary. Through this design, teachers can attain "pedagogical automaticity." Thus with the science of teaching automatic, instructors are able to focus on the learner and the specific content for that day.

In 2007, Robert Marzano wrote *The Art and Science of Teaching: A Comprehensive Framework for Effective Instruction* (2007). In this text, Marzano asked ten key questions and then presented the research to show which strategies are most effective at improving student learning. Marzano's (2007) ten questions are as follows:

1. What will I do to establish and communicate learning goals, track student progress, and celebrate success?
2. What will I do to help students effectively interact with new knowledge?
3. What will I do to help student practice and deepen their understanding of new knowledge?
4. What will I do to help students generate and test hypotheses about new knowledge?
5. What will I do to engage students?
6. What will I do to establish or maintain classroom rules and procedures?

7. What will I do to recognize and acknowledge adherence and lack of adherence to classroom rules and procedures?
8. What will I do to establish and maintain effective relationships with students?
9. What will I do to communicate high expectations for all students?
10. What will I do to develop effective lessons organized into a cohesive unit?

Marzano's (2007) work appeared to mirror Stronge's work in that it identified what the most effective teachers do, both in the area of curriculum and instruction as well as procedures and relationships with students.

In 2007, Charlotte Danielson released the second edition of *Enhancing Professional Practice: A Framework for Teaching*. Danielson's text is organized into 22 components divided into four particular domains. The four domains are as follows:

1. Planning and Preparation
2. The Classroom Environment
3. Instruction
4. Professional Responsibilities

Then, within each of these domains, Danielson (2007) further organized by component. For instance, under domain one – Planning and Preparation, the following components were found:

1. Demonstrating knowledge of content and pedagogy
2. Demonstrating knowledge of Students
3. Setting instructional outcomes
4. Demonstrating knowledge of resources

The literature appeared to be filled with information on effective pedagogy covering a range of skills from developing relationships with children to writing daily lesson plans and year-long curriculum documents.

More recently, in *Education Matters*, author Jamie Davies O'Leary (2010) argued that there are six traits that make up "all-star" teachers:

1. Set goals that are ambitious, specific, and measurable.
2. Invest in students and their families.

3. Plan purposefully.
4. Execute effectively.
5. Increase effectiveness continuously.
6. Work relentlessly.

Davies O' Leary (2010) goes on to talk about the importance of being able to move from a model of evaluating teachers by what they are doing to a model of evaluating teachers on the basis of how well their students are learning by stating, "Instead of evaluating teachers by what they did (e.g., certification or college courses), the administration wants to evaluate them on what they do (using student achievement metrics)" (p. 2).

In *Teach With Your Strengths: How Great Teachers Inspire Their Students*, authors Liesveld, Miller, and Robison (2005) utilized years of research from the Gallup organization to conclude that great teachers are not all the same. In fact, they can and many times are very different from each other. The key is that the best teachers do not try to be "well-rounded." Instead, they focus on their strengths and teach to their strengths.

In *Understanding by Design*, Wiggins and McTighe (2006, p. 227) continued this focus on results by quoting James Mursell (Successful Teaching, 1946, p. 1) as saying

> Successful teaching is teaching that brings about effective learning. The decisive question is not what methods or procedures are employed, and whether they are old-fashioned or modern, time-tested or experimental, conventional or progressive. All such considerations may be important but none if them is ultimate, for they have to do with means, not ends. The ultimate criterion for success in teaching is – results!

In 2009, John Hattie released *Visible Learning: A Meta-Analyses Relating to Achievement.* Hattie puts forth evidence from his study that there are all kinds of literature on what teachers and schools should do and what is effective in classrooms and schools, saying "The research literature is rich in recommendations as to what teachers

and schools should do" (Hattie, 2009, p. 2). But, all of these "good ideas" have produced very limited gains, if any. Hattie indicated

> There are thousands of studies promulgating claims that this method works or that innovation works. We have a rich educational research base, but rarely is it used by teachers, and rarely does it lead to policy changes that effect the nature of teaching. (p. 2)

Further, Hattie (2009) claimed the research showed that a teachers approach to teaching (their tool kit) will produce much greater gains in student learning than teacher subject knowledge.

Knowing-Doing Gap

The knowing-doing gap is identified in multiple fields. Pfeffer and Sutton (1999) identified eight themes that influence one's ability to turn knowledge into action, in other words, to eliminate the knowing-doing gap. These eight themes are:

1. Why before How: Philosophy is Important.
2. Knowing Comes from Doing and Teaching Others How.
3. Action Counts More Than Elegant Plans and Concepts.
4. There is No Doing without mistakes. What is the Company's Response?
5. Fear Fosters Knowing-Doing Gaps. So Drive Out Fear.
6. Beware of False Analogies: Fight the Competition, Not Each Other.
7. Measure What Matters and What Can Help Turn Knowledge into Action
8. What Leaders Do, How They Spend Their Time and How They Allocate Resources, Matters. (pp. 95-105)

In other words, Pfeffer and Sutton (1999) analyzed what organizations need to do in order to eliminate the knowing-doing gap. By focusing on these eight themes, the authors claimed that leaders can be much more effective at turning knowledge into action.

In examining the issue of the knowing-doing gap, it is important to discern whether it is a "doing" gap or a "knowing-doing" gap. Robert Burton (2008) provided some useful insight into this issue with his book titled *On Being Certain: Believing You*

Are Right Even When You're Not (Burton, 2008). Burton is a neurologist by trade and argued that "knowing" or being "certain" about something is in fact a mental sensation rather than specific evidence of fact. Burton challenged the reader to examine what we know about what we think we know.

In 2007, Ken Blanchard and colleagues released *Know Can Do*. The authors explained a method for learning more and learning better as well as making sure you actually use what you learn. The authors suggested that there are three primary sources of the knowing-doing gap and some suggestions for addressing those issues:

1. Too much knowledge or information overload.
    a. People should learn less more and not more less. (p. 21)
    b. To master something, we should focus on a few key concepts, repeat them over time, immerse ourselves deeply in them, and expand on the ideas and skills. Spaced repetition is key. (p. 30)
2. Too much negativity or inadequate filtering system.
    a. Because we don't get unconditional love and support when we are young, we begin to doubt ourselves and doubt others. (p. 56)
    b. Self-doubt causes us to filter all information--whether in book, audio, video, seminar, or conversation format--through our indecisive, closed-minded, judgmental, critical, fear-ridden mind-set, which leads to negative thinking. (p. 56)
    c. Negative thinking causes us to learn and use only a small fraction of what we see and hear, achieve only a small percentage of what we could achieve, and accept too little too soon. (p. 56)
    d. We grow best with a positive, open mind that ignites our creativity, ingenuity and resourcefulness and creates possibilities beyond our expectations. (p. 56)
    e. We must find ways to become ready and willing to pen our minds. Instead of trying to find what's *wrong* in the new information, we need to be Green Light Thinkers who actively seek out what's right and say to ourselves: "I know there is something of value in what I'm reading or hearing; what is it?" (p. 57)

The authors also offered some guidance on steps that individuals generally follow when exposed to new ideas, saying that as people move from rejection to assimilation (Blanchard et al., 2007, p. 48), they reject their first exposure, resist their second

exposure, partially accept their third exposure, fully accept their fourth exposure, partially assimilate their fifth exposure, and fully assimilate their sixth exposure.

3. Bad habits, or lack of follow-up. (p. 87)
    a. Successful people yearn to learn and have a follow-up plan for learning.
    b. Doing what we've been taught cannot be left to chance. A follow-up plan that provides structure, support and accountability must be set up to help us behave on our good intentions.
    c. The sequence of *tell me, show me, let me, observe me, and praise my progress or redirect me* is a simple but powerful follow-up plan that helps potential winners become winners.
    d. Accentuating the positive helps learners become eager beavers. Praising progress is important before redirecting or correcting takes place. Over time, learners should be able to praise and redirect themselves.

Lastly, the authors encouraged the reader to share what they have learned with others, knowing that when we can teach others we have learned it ourselves.

Motivation/Change Process

Literature on motivation and the change process is considerable. In *Who Moved My Cheese* (1998), author Spencer Johnson took a humorous but serious look at a process for embracing the change process. Johnson told the story of two mice – one of the mice successfully embraced the change process while the other mouse is not able to. From the story of these two mice came the following keys:

1. Change Happens – They keep moving the cheese.
2. Anticipate Change – Get ready for the cheese to move.
3. Monitor Change – Smell the cheese often so you know when it is getting old.
4. Adapt to change quickly – The quicker you let go of old cheese, the sooner you can enjoy new cheese.
5. Change – Move with the cheese.
6. Enjoy Change - Savor the adventure and the taste of new cheese.
7. Be Ready to Quickly Change Again and Again – They keep moving the cheese.

In 2004, Shulman and Shulman asserted that some educators have the knowledge but lack the will or motivation to change. Teachers can attend staff development

sessions, read journal articles and books, and hold discussions with colleagues, but still are unable or unwilling to change. Shulman and Shulman likend this to any other change endeavor, as they stated "We draw an analogy to a person with a vision of no longer smoking, or of eating more healthily, or of exercising regularly, but lacking the will or the supportive environment to enact the vision" (p. 261).

In 2006, Linda Darling-Hammond in *Powerful Teacher Education*, claimed that the key to improving student learning is improving teaching. And, the key to improving teaching is improving our schools of education so that we are preparing our future teachers with the required skills to teach all learners well (Darling-Hammond, 2006). Darling-Hammond described what outstanding teacher education models do and how they do it. And, consequently what their graduates are able to do as a result of this training.

In 2006, best-selling author and speaker John C. Maxwell released *The Difference Maker: Making Your Attitude Your Greatest Asset*. As the title suggests, Maxwell presented the viewpoint that two people with the same skills and abilities, in the same situation can end up with two totally different outcomes. The reason for that is simply the difference in their attitudes. Maxwell suggested that there are five major attitude obstacles: discouragement, change, problems, fear, and failure. By overcoming these obstacles, you can make your attitude your greatest asset and impact not only your life, but also the lives of those around you.

Specifically, Maxwell (2006) cited five major reasons why people resist change:

1. Personal loss – people feel alone and vulnerable. (p. 81)
2. Fear of the unknown – It is what we don't know that makes us afraid. (p. 84)

3. Timing could be wrong. Maxwell has created a check-list for changes, arguing that enough of the following have be answered in the affirmative or perhaps the timing of the change is off. (pp. 85-86)
    a. Will this benefit the followers?
    b. Is this change compatible with the purpose of the organization?
    c. Is this change specific and clear?
    d. Are the top 20 percent (the influencers) in favor of this change?
    e. Is it possible to test this change before making a total commitment to it?
    f. Are physical, financial, and human resources available to make this change?
    g. Is this change reversible?
    h. Is this change the obvious next step?
    i. Does this change have both short-and long-range benefits?
    j. Is the leadership capable of bringing about this change?
    k. Does everything else indicate the timing is right?
4. People resist change because it feels awkward – takes us out of our comfort zones. (p. 87)
5. Tradition – the assumption is that if something is tradition, it must be a better way. (p. 87)

Maxwell went on to present that the key to dealing with change successfully is to have a good attitude toward the change process. In addition, Maxwell cited six key preparation points for successful change (2006, pp. 88-96):

1. Change will happen whether you like it or not.
2. Without change, there can be no improvement.
3. Make a commitment to pay the price for change.
4. Change must happen within you before it can happen around you.
5. Decide what you are not willing to change.
6. Remember, it's never too late to change

Ultimately Maxwell (2006) indicated that the most successful people are able to embrace change and make their attitude their biggest asset in this process.

In *The Seven Habits of Highly Effective People* (2004), best-selling author and speaker Stephen Covey explained certain principles that will help to adapt to change and ultimately take advantage of the new opportunities that come out of the change process. Covey argued that our habits are created out of three areas: knowledge (what to, why to), skills (how to), and desire (want to) (p. 48).

That same year, Lance Secretan released *Inspire: What Great Leaders Do* (2004). Secretan aasserted that "Higher Ground Leadership" demands that we do not aim to motivate people, rather we should aim to inspire others. Secretan argued that we should do that by appealing to people's hearts and souls rather than manipulating, exploiting, and controlling the behavior of others. Secretan analyzed the lives of Mahatma Gandhi, Thomas Jefferson, Martin Luther King, Jr., and Nelson Mandela and concluded there are three keys to inspiring others that all great leaders have known:

1. Destiny – Why am I here on earth.
2. Cause – How I will be while I am here and what I will stand for.
3. Calling – What I will do and how I will use my talents and gifts to serve.

Secretan argued that by helping individuals focus on their destiny, cause, and calling, we can help inspire them to greatness. After these three steps, Secretan outlined four additional steps that leaders should take:

1. Aligning Destiny, Cause, and Calling
2. Serving Followers
3. Guiding the Contribution of Brilliance
4. Creating the environment that Inspires Others to Inspire Us

Secretan contended that ultimately "Higher Ground Leaders" will be such an inspiration to others that they become "inspired by their capacity to inspire" (2004, p. 212). Secretan also argued the importance of love as a motivator saying "Higher Ground Leaders love others so genuinely, they cannot rest serving them –and followers are at once inspired by this congruence. The result is a connection of souls, of people doing soulwork, and of the creation of a sanctuary. These are magical moments and magical places in which to live and work because Higher Ground Leaders are fully present" (p. 211).

In *Outliers: The Story of Success* (2008), author Malcolm Gladwell painted a very unique picture of the successful. One of the concepts that Gladwell claimed is that it

takes 10,000 hours of practice to become truly great at something. Gladwell used the Beatles as an example, as well as Bill Gates. Teachers, according to Gladwell's analysis, would have to spend approximately ten years in the classroom to truly have an opportunity to achieve greatness in their profession.

In 2009, Daniel Pink released *Drive* that argued against the old model of motivation and argued for a new method of motivation. Pink described the old motivation as the carrot and stick approach. This old approach worked fine for the industrial age when we had to motivate individuals to work the factory line. However, today's top achievers are much better motivated by autonomy, mastery, and purpose. That is to say that individuals have a deep need to direct their own lives, to pursue mastery by moving from compliance to engagement, and lastly, to be doing something for a cause bigger than ourselves.

Summary of Literature Review

In summary, there is ample research and literature that cites the teacher as the most important factor in a student's learning (Danielson, 2007; Marzano et al., 2001; Pollock, 2007; Schmoker, 2006; Stronge, 2002). Given the importance of the individual teacher for improving student learning it is vital to identify what makes some teachers more effective than others. There is significant research on what makes an effective teacher (Danielson, 2007; Hammond, 2006; Marzano et al., 2001; Marzano, 2003, 2007; Pollock, 2007; Saphier & Gower, 1997; Schmoker, 2006; Sousa, 2006; Stronge, 2002; Whitaker, 2004). While each of these authors have their differences, most cite the importance of a clear curriculum, effective instructional strategies, and positive communication and relationships. In other words, the most effective teachers are those

teachers that use a clear, well-defined curriculum; consistently and systematically use research-based instructional strategies; and are effective at building and maintaining positive relationships with students, peers, administrators, and other stake-holders.

The knowing-doing gap has been identified in multiple fields (Pfeffer & Sutton, 2000). The literature explains just how difficult it is for people, in any field, to make changes (Blanchard et al., 2007; Covey, 2004; Johnson, 1998; Maxwell, 2006; Pink, 2009; Secretan, 2004). Individuals naturally resist change. We are creatures of our habits and making changes, however small, generally appears to be a fairly difficult task. It is important to note that learning about a new strategy or a different assessment method is very different than actually changing your practices.

However there is also plenty of literature on helping individuals move from what they have learned and picked up in classes, workshops, books, etc. to what they actually do in the classroom. For instance, in *Know Can Do*, Blanchard et al. (2007) outlines the steps necessary to move from what you know to what you actually do. However, the reality is it is much easier to attend a workshop than it is to change our practices.

When it comes to the actual change process, the role of motivation cannot be overstated. Multiple authors have written about the change process and importance of motivation (Covey, 2004; Gladwell, 2008; Johnson, 1998; Maxwell, 2006; Pink, 2009; Secretan, 2004). Ultimately, in order for real change to take place, individual teachers have to recognize the importance of change, embrace it as their own, and have the support and follow up that is necessary to see the changes become a part of their pedagogy. Once individuals have gone through these steps and have seen the positive

impact and benefit it has on others around them, they will be able to make these changes more permanent.

Chapter Three

Methodology

Introduction

The purpose of this modified mixed-methods study was to add to the body of knowledge on teacher pedagogy by specifically identifying what high school mathematics, science, English, and social studies teachers know about the use of effective instructional strategies and what they do in their classrooms.

The increased emphasis on student achievement as well as the research that demonstrates the teacher is the most important factor in improving student learning (Danielson, 2007; Marzano et al., 2001; Pollock, 2007; Schmoker, 2006; Stronge, 2002), created a compelling need to examine what high school teachers know about effective pedagogy and what they actually do in the classroom. There is ample research on research-based instructional strategies available to teachers (Danielson, 2007; Marzano et al., 2001; Pollock, 2007; Stronge, 2002), however there is little research available on what teachers actually do in the classroom.

The researcher used a modified mixed-methods approach. According to Creswell and Plano Clark (2007), the mixed-methods approach is superior because it provides a better understanding of research than if the researcher only utilized a quantitative or qualitative approach. Specifically, Creswell and Plano Clark (2007) cites six arguments for utilizing a mixed-methods approach:

1. Mixed methods research provides strengths that offset the weaknesses of both quantitative and qualitative research. (p. 9)
2. Mixed methods research provides more comprehensive evidence for studying a research problem than either quantitative or qualitative research alone. (p. 9)
3. Mixed methods research helps answer questions that cannot be answered by qualitative or quantitative approaches alone. (p. 9)

4. Mixed methods encourages researchers to collaborate across the sometimes adversarial relationship between quantitative and qualitative researchers. (p. 9)
5. Mixed methods research encourages the use of multiple worldviews or paradigms rather than the typical association of certain paradigms for quantitative researchers and others for qualitative researchers. (p. 10)
6. Mixed methods research is "practical" in the sense that the researcher is free to use all methods possible to address a research problem. (p. 10)

This project fit Creswell's definition of a mixed methods study in that the researcher collected data "using a quantitative survey instrument and followed up with interviews with a few individuals who participated in the survey to learn more detail about their survey responses (Creswell & Plano Clark, 2007, p. 11). More specifically, this mixed-methods study could be defined as an Explanatory Design in that it was a two-phase study in which "the qualitative data helps explain or build upon initial quantitative results" (Creswell & Plano Clark, 2007, p. 71). In other words, the quantitative portion of the study provided numbers and statistics, while the qualitative portion added dimension and enlarged the readers' capacity to understand what teachers actually know about effective instruction and what they do in their classrooms.

Research Questions

The purpose of this study was two-fold: (a) to examine whether high school mathematics, science, English, and social studies teachers possess the pedagogical knowledge about instructional strategies to create an effective classroom; and (b) to examine to what degree they use these instructional strategies. This study was guided by the following research questions:

1. What declarative pedagogical knowledge do teachers possess?
2. Where did teachers acquire their pedagogical knowledge (teaching tool kit)?

3. What declarative pedagogical knowledge are teachers missing?
4. Is there pedagogical knowledge that teachers are missing that they would like to acquire?
5. To what extent do teachers utilize the pedagogical knowledge they possess?
6. How do teachers test the efficacy of their practices?

Questions 1 through 4 specifically examined the pedagogical knowledge that teachers possess about instructional strategies, where they acquired that knowledge, what specific pedagogical knowledge about instructional strategies teachers were missing, and if there were additional instructional strategies they would have liked to acquire. Question 5 examined the extent to which teachers use the knowledge they have acquired. Last, Question 6 addressed how teachers checked to see how well they were doing with their instruction.

Research Design

This study used a mixed methods design in order to explain whether high school mathematics, science, English and social studies teachers had or possessed the pedagogical knowledge about instructional strategies to create an effective classroom and to inquire about whether they use these instructional strategies. According to Creswell and Plano Clark (2007), a mixed methods approach is superior to simply using a quantitative or qualitative approach because it provides a better understanding of research than if the researcher only utilized a quantitative or qualitative approach.

The essential pedagogical knowledge about instructional strategies that teachers should have in order to be effective instructors has been identified in Chapter Two, the Review of the Literature, and is described under "Survey Instrument and Procedures."

Data was collected through the use of a web-based survey entitled "What do teachers know and what do they do." This survey was created by the researcher (Appendix C). For the survey delivery engine, the researcher used Survey Monkey. The researcher chose to use a web-based survey because it allowed participants some flexibility to respond to the survey anytime during the response window and at a time that was convenient to them.

In addition, teachers were able to identify on the survey if they would be willing to participate in a follow-up interview. Three teachers initially indicated that they were willing to complete a follow-up interview. Of the three teachers who initially indicated they were willing to participate, two of them responded to an e-mail request to schedule a time for the interview. The researcher recognized that this was not an ordinary group. It was not a cross sample and the sample was ultimately too small to be able to make generalizations.

Population

The survey population for the study consisted of high school mathematics, science, English, and social studies teachers in accredited schools in 2011-2012 in the state of Nebraska. These teachers were identified by contacting principals throughout the state of Nebraska through e-mail. The e-mail asked principals to forward a request for all high school mathematics, science, English, and socials studies teachers to complete a survey on what they know about effective pedagogy and what they actually do in the

classroom. The researcher utilized a purposeful sample in order to identify schools that represented all school classifications as well as schools from a variety of geographical locations in the state of Nebraska. Again, the researcher sent an e-mail to principals asking them to forward the survey request to all of their mathematics, science, English, and social studies teachers. If all of the principals who were contacted forwarded the e-mail to all of their core teachers, approximately 350 teachers would have received the request to complete the on-line survey.

Principals received an e-mail about the nature of the survey, including a direct link to the survey website and a request to forward on to their core teachers on November 11, 2011. Ten days later, on November 21, 2011, a follow-up e-mail was sent to principals. Then, a third and final e-mail reminder was sent on November 30, 2011. The survey site was open for approximately one month, closing on December 9, 2011. A total of 35 teachers completed the on-line survey. In addition, participants were allowed to make themselves available for a follow-up interview. Three teachers initially agreed to a follow-up interview although only two of those three teachers followed up and completed the interview.

E-mail addresses for principals were obtained from the Nebraska School Activities Association. The researcher then relied on high school principals to forward the survey request and link to all of their mathematics, science, English, and social studies teachers.

Mathematics, science, English, and social studies teachers were selected because the researcher wanted to elicit responses from all core classes to see if there were differences between specific academic subjects, school sizes, and teacher experiences.

A number of factors could inhibit the ability of the research to make valid inferences from this population. Some of these factors could include non-response error, survey-fatigue, and feelings of embarrassment over individual practices. The researcher tried to minimize this factor by limiting the number of questions and by emphasizing that all responses would remain anonymous.

Survey Instrument and Procedures

The researcher developed the "What do Teachers Know and What do Teachers do" survey (Appendix B), a web-based survey, to collect data for this study. The research instrument for this study was piloted with three individuals who are considered experts in the field of education, specifically teacher pedagogy and the use of instructional strategies. This panel included Mr. Ryan Ricenbaw, principal at Waverly High School, Dr. Bill Heimann, superintendent of schools for School District #145, and Dr. Zach Kassebaum, superintendent of schools for Ashland, Nebraska public schools. The researcher selected and asked these three individuals to take the "What do Teachers Know and What do Teachers do" as a pilot. These three individuals were all considered educational experts that would have the same kind of pedagogical knowledge about instructional strategies expert teachers would be expected to have.

The survey, designed to gather information based on a review of the literature on the subject, consisted of 22 items that were divided into seven sections. The first section included nine questions about teacher demographics. The next five sections used a 6-point Likert scale to determine what it is that teachers know about effective pedagogy and what they actually do in their classrooms. The final section included open-ended

questions so respondents could identify strategies not included in the Likert scale questions.

Section One sought specific demographic information from the participants. This section included nine questions. Question 1 and 2 asked teachers to identify their gender and total years in education. Questions 3, 4, and 5 sought information on the size of school, the classification of school in which the teacher was employed, and the teachers' primary teaching assignment. Question 6 asked respondents the highest level of education they had attained. Question 7 asked respondents to identify how long it has been since their last graduate-level course. Question 8 asked whether they taught public or private school. Last, Question 9 asked whether their school utilized professional learning teams as a part of their professional development. This demographic information helped the researcher to refine the data into subgroup populations and thus better understand what teachers know about pedagogical knowledge and what pedagogical knowledge they actually use in their classrooms based on a variety of demographic variables.

Section Two included questions designed to measure the pedagogical knowledge teachers possess. Question 10 asked respondents to identify the four most successful instructional strategies they have used with their students. Respondents were able to select from a list of ten instructional strategies. Question 11 asked respondents to identify how many instructional strategies they use with their students on a regular basis. Respondents could select from answers between one and two to more than six. Question 12 asked respondents to rate their knowledge of ten instructional strategies. A six point Likert scale was used with 0 representing do not know, 1 representing not

knowledgeable, 2 for very little knowledge, 3 for neutral, 4 for knowledgeable, and 5 for very knowledgeable.

Section Three was designed to determine where teachers acquired their pedagogical knowledge. Question 13 asked respondents to identify to what extent they acquired their pedagogical knowledge from their experiences as an undergraduate student, their cooperating teacher/student teaching experience, graduate classes, staff development sessions, or from a special conference or speaker. The items were measured with a six point Likert scale. This Likert scale used 0 for do not know, 1 for none, 2 for a few strategies, 3 for some strategies, 4 for most strategies, and 5 for all of my strategies.

Section Four was designed to determine what instructional strategies are utilized in teachers' daily instruction. The respondents were asked to identify which instructional strategies are used in teachers' daily instruction. Ten instructional strategies were identified – learning objectives, accessing prior knowledge, delivery of declarative information, delivery of procedural information, application of new information, summarizing/generalization, note taking, comparing similarities and differences, providing reinforcement/recognizing effort, and cooperative learning/small group work. These ten instructional strategies were measured on a 6-point Likert scale. 0 indicated that the respondents did not know, 1 indicated never, 2 indicated rarely, 3 depends on the day or the lesson, 4 indicates frequently, and 5 indicates always.

Section Five included ten items used to determine what pedagogical knowledge teachers would like to possess. Again, there were ten instructional strategies presented, including learning objectives, accessing prior knowledge, delivery of declarative information, delivery of procedural information, application of new information,

summarizing/generalization, note taking, comparing similarities and differences, providing reinforcement/recognizing effort, and cooperative learning/small group work. These ten instructional strategies were measured with a 6-point Likert scale with 0 indicating that the respondent did not know, 1 indicating not wanting to acquire any more of the strategies, 2 for only minimally interested in acquiring more knowledge, 3 for neutral, 4 for interested in acquiring more knowledge, 5 for very interested in acquiring more knowledge.

Section Six used a 6-point Likert scale to measure how teachers test the efficacy of their instructional practices. In other words, the researcher wanted to determine how teachers evaluate the effectiveness of their instructional practices. Respondents were asked to determine how often they used various forms of feedback to test the efficacy of their instructional practices. The various forms included feedback for formal evaluations, feedback from administrative walk-throughs, informal feedback from colleagues, feedback from professional learning communities, feedback from self-evaluation, formal student feedback, feedback from formal, local assessments, and feedback from formal, statewide assessments. 0 indicated that respondents did not know, 1 indicated that the strategy was never utilized, 2 indicated the strategy was rarely utilized, 3 indicated the strategy was sometimes utilized, 4 indicated the strategy was almost always utilized, and 5 indicated the strategy was always utilized.

Section Seven included six open-ended questions. Questions 17 and 18 asked teachers if there were additional instructional strategies not mentioned in the survey that they use on a regular basis or strategies that they use occasionally. In addition, Questions 19 and 20 asked if there was a method of acquiring instructional strategies that was not

mentioned in the survey. Question 21 asked if there were additional instructional strategies not mentioned in the survey that the respondents would like to learn more about. Last, Question 22 asked the respondents if they were willing to be contacted for a follow-up interview and if so, to provide their name, phone number, and e-mail.

Construct Validity

Test validity is the ability of a test to measure what it is supposed to measure. The purpose of the test must be absolutely clear. The researcher sought to determine what mathematics, science, English, and social studies teachers know about effective instructional strategies and what instructional strategies they actually use in their classrooms. Thus, the researcher wanted to make the research instrument as clear as possible. In order to minimize measurement error occurring from ambiguity in the research instrument, the researcher sought out expert advice in the evaluation of the instrument (Creswell & Plano Clark, 2007).

The researcher sought the expert assistance and advice of Dr. Toby Boss, director of staff development for Educational Service Unit #6, with whom the researcher had previously corresponded on this and other topics. The researcher asked and received his feedback, as well as the names of three others who could serve as an expert panel to assist the researcher in the development of a valid research instrument. Specifically, Appendix C was provided for Dr. Boss' feedback as to whether or not each designated item measured what was intended. In addition, the researcher asked for feedback on what should be changed and how to ensure that each item more accurately measured what was intended.

The research instrument for this study was piloted with three individuals who are considered experts in the field of education, specifically teacher pedagogy and the use of instructional strategies. This panel included Mr. Ryan Ricenbaw, principal at Waverly High School; Dr. Bill Heimann, superintendent of schools for School District #145; and Dr. Zach Kassebaum, superintendent of schools for Ashland, Nebraska public schools. The researcher selected and asked these three individuals to take the "What do Teachers Know and What do Teachers do" as a pilot. These three individuals are all considered educational experts that would have the same kind of pedagogical knowledge about instructional strategies expert teachers would be expected to have.

Upon completion of the survey, these three individuals were asked for their written and/or verbal feedback evaluating the clarity and appropriateness of each survey question. In addition, the participants were asked to provide any other comments they had which would further refine the research instrument. These responses, coupled with the expert feedback, were used to refine the survey instrument (Creswell & Plano Clark, 2007) for construct validity.

For the qualitative portion of the study, the researcher developed a set of questions to ask the individuals who agreed to a follow up survey. The researcher based these questions on the set of research questions that guided the quantitative portion of the study as delivered through the survey. Specifically, the researcher interviewed the participants by asking the following research questions and sub-questions:

1. Research Question: What pedagogical knowledge do teachers possess?
    - Explain what your most effective instructional strategies are.
    - Explain how often you use your most effective instructional strategies.

2. Research Question: Where was the teachers' pedagogical knowledge acquired?
   - Explain where you acquired your most effective instructional strategies.
   - Explain what you would consider your least effective training.
   - What made it your least effective training?

3. Research Question: What pedagogical knowledge do teachers utilize?
   - Explain which strategies you use consistently and systematically.

4. Research Question: What pedagogical knowledge would teaches like to possess?
   - In what area of instruction would you like to be more effective?
   - What would you be willing to do to acquire that pedagogical knowledge?

5. Research Question: How do teachers test the efficacy of their pedagogy?
   - How do you know when a strategy you used in the classroom was effective?

Reliability

Reliability tests an instrument's ability to yield the same results under a variety of different circumstances. Specifically, if a person retakes or takes a similar test, it should yield similar results. For the quantitative portion of the study, the researcher utilized a proven research tool, the internet-based Survey Monkey. Also, if a test is reliable, it should yield the same results, even if it is scored by someone else. Again, for the quantitative portion, the researcher utilized a proven research tool, the internet-based Survey Monkey. For the qualitative portion of the test the researcher utilized proven strategies for interpreting the data including the coding of the interview and development of common themes.

Data Analysis

The purpose of this modified mixed methods study was to add to the body of knowledge on teacher pedagogy by specifically identifying what high school mathematics, science, English, and social studies teachers know about effective

instructional strategies and what they do in their classrooms. The steps taken to complete this study included using a web-based survey (Survey Monkey) to collect the data. This survey represented the quantitative portion of the modified, mixed-methods study.

According to Creswell and Plano Clark (2007, p. 129), there are five steps to analyzing quantitative data. First, the data must be prepared for analysis, followed by exploring the data, analyzing the data, representing the data analysis, and validating the data. For the quantitative portion of the study, the researcher prepared the data for analysis by utilizing the graphs and reports generated by Survey Monkey. In order to explore the data, the researcher visually inspected the data by reading through the graphs and charts while beginning the process of checking for trends and distributions. The researcher analyzed the data by looking at the research questions and the distribution of responses. The researcher represented the data analysis by providing the results in a table and representing the results in a statement of results. Last, the researcher validated the data by comparing it with the results of the qualitative portion of the study.

Then for the qualitative portion of the modified mixed-methods portion of the study, the researcher followed Creswell and Plano Clark's (2007, p. 129) procedures for qualitative data analysis, which includes preparing the data for analysis, exploring the data, analyzing the data, representing the data analysis, and validating the data.

In order to prepare the data for analysis, the researcher recorded the interviews and then delivered the recording device to a professional transcriptionist. The professional transcriptionist transcribed the data for the researcher. The transcriptionist e-mailed the interviews to the researcher (Appendices K and L).

For exploring the data, Creswell and Plano Clark (2007) recommended reading through the data, writing memos, and developing a qualitative codebook. After picking up the transcribed interviews from the professional transcriptionist, the researcher first read through the entire interviews. Then, one at a time, the researcher went back and read the interviews again looking for key phrases. The researcher first went through each of the interviews and highlighted key sentences and phrases. Then the researcher wrote these key phrases in the right hand margin of the transcribed document. The researcher also began assigning these key phrases codes.

Next the researcher began analyzing the data to determine what high school science, mathematics, English, and social studies teachers know about effective instructional strategies and what they actually do in their classrooms. In order to analyze the data the researcher looked at the key phrases on the right hand margin and began assigning labels to the data in the left-hand margin of the document. From this data, the researcher interpreted the data to determine what common themes emerged (Creswell & Plano Clark, 2007). At this point, seven ideas began to emerge:

1. teachers need time for development,
2. staff development/teacher training that is usable and valuable,
3. need for student engagement,
4. students understanding rather than memorizing,
5. importance of using a variety of instructional strategies,
6. teachers want to improve their instructional strategies for advanced students, and

7. improving instruction through feedback – from colleagues, administrators and students.

The researcher represented the data analysis by identifying and listing the seven ideas. The researcher also represented the findings in a discussion of the themes, which included specific quotes from the individuals who were interviewed by the researcher.

Last, the researcher validated the data by employing validation strategies (Creswell & Plano Clark, 2007, p. 129). Specifically, the researcher had various peers review the themes and the discussion of the ideas. In addition, the researcher sent the transcribed interviews back to the participants and gave them an opportunity to correct any inaccuracies and/or add to what they originally stated in their interview.

Summary

Given the importance of the work of teachers to improve student learning and the amount of resources spent on teacher training and development, this modified mixed-methods study examined what teachers know about effective pedagogy and the use of instructional strategies and to what extent they use effective instructional strategies in their classrooms. The survey population for this study consisted of high school mathematics, science, English, and social studies teachers in accredited schools in 2011-2012 in the state of Nebraska. The researcher relied on building level principals to forward the survey on to the respective teachers. Then, the researcher utilized a purposeful sample in order to identify schools that represented all school classifications, as well as schools from a variety of geographical locations in the state of Nebraska. The researcher sent out an e-mail to principals asking them to forward the survey request to all of their mathematics, science, English, and social studies teachers. If all principals

forwarded the e-mail to all of their core teachers, approximately 350 teachers would have received the request to complete the on-line survey.

Principals received an e-mail about the nature of the survey, including a direct link to the survey website and a request to forward on to their core teachers on November 11, 2011. Ten days later, on November 21st, 2011, a follow-up e-mail was sent to principals. Then, a third and final reminder was sent on November 30th, 2011. The survey site was open for approximately one month, closing on December 9th, 2011. A total of 35 teachers completed the on-line survey. In addition, participants were allowed to make themselves available for a follow up interview. Three teachers initially agreed to a follow-up interview. Of those three, two followed up the researcher's e-mail request to conduct an interview.

Email addresses for principals were obtained from the Nebraska School Activities Association. The researcher then relied on high school principals to forward the survey request and link to all of their mathematics, science, English, and social studies teachers.

Mathematics, science, English, and social studies teachers were selected because the researcher wanted to elicit responses from all core classes to see if there were differences between specific academic subjects, school sizes, and teacher experiences.

Analysis of the data provided specific information on what teachers know about effective instructional strategies and what they do in their classrooms. This study may be useful for professional organizations, institutions of higher learning, educational service units, and central office personnel in their evaluation and development of the next generation of educators. By clearly identifying what it is that teachers know and what they do in their classrooms, these organizations can more strategically identify teacher

strengths and deficits, provide resources to remedy the deficits, and ultimately improve student learning in classrooms across the United States.

Chapter Four

Results

Purpose

The purpose of this study was two-fold: (a) to examine whether high school mathematics, science, English, and social studies teachers possess the pedagogical knowledge about instructional strategies to create an effective classroom, and (b) to examine to what degree they use these instructional strategies. Teachers of accredited high schools in the state of Nebraska for the 2010 – 2011 school year were surveyed using an instrument developed by the researcher from a review of the literature. Hence, this modified mixed-methods study aimed at learning what teachers know about effective instructional strategies and what teachers actually do in their classrooms.

Research Questions

The purpose of this study was two-fold: (a) to examine whether high school mathematics, science, English, and social studies teachers possess the pedagogical knowledge about instructional strategies to create an effective classroom, and (b) to examine to what degree they use these instructional strategies. This study was guided by the following research questions:

1. What declarative pedagogical knowledge do teachers possess?
2. Where did teachers acquire their pedagogical knowledge (teaching tool kit)?
3. What declarative pedagogical knowledge are teachers missing?
4. Is there pedagogical knowledge that teachers are missing that they would like to acquire?

5. To what extent do teachers utilize the pedagogical knowledge they possess?
6. How do teachers test the efficacy of their practices?

Questions 1 through 4 specifically examined what pedagogical knowledge teachers possess, where they acquired that knowledge, what specific pedagogical knowledge teachers are missing, and if there is additional pedagogical knowledge they would like to acquire. Question 5 examined the extent to which teachers use the knowledge they have acquired. Last, Question 6 sought to determine how teachers check to see how well they are doing with their instruction.

Research Design

This study used a mixed methods design in order to explain whether high school mathematics, science, English and social studies teachers have the pedagogical knowledge about instructional strategies to create an effective classroom and do they use this pedagogical knowledge about instructional strategies. According to Creswell and Plano Clark (2007), a mixed methods approach is superior because it provides a better understanding of research than if the researcher only utilized a quantitative or qualitative approach.

The essential pedagogical knowledge that teachers should have in order to be effective instructors has been identified through the Review of the Literature (Chapter Two) and is described under "Survey Instrument and Procedures" in Chapter Three.

Data were collected through the use of a web-based survey titled "What do teachers know and what do they do." This survey was created by the researcher (Appendix C). For the survey delivery engine, the researcher used Survey Monkey. The

researcher chose to use a web-based survey because it allowed participants some flexibility as they were able to respond to the survey anytime during the response window at a time that was convenient to them.

In addition, teachers were able to identify on the survey if they would be willing to participate in a follow-up interview. Three teachers initially identified that they were willing to complete a follow-up interview. Of the three teachers who initially indicated they would be willing to participate, two of them responded to an e-mail request to schedule a time for the interview. The researcher recognizes that this was not an ordinary group. It was not a cross sample and the sample was ultimately too small to be able to make generalizations.

Participants

The survey population for this study consisted of high school mathematics, science, English, and social studies teachers in accredited schools in 2011-2012 in the state of Nebraska. These teachers were identified by contacting principals throughout the state of Nebraska through e-mail. The researcher utilized a purposeful sample in order to identify schools that represented all school classifications as well as schools from a variety of geographical locations in the state of Nebraska. The researcher sent out an e-mail to principals asking them to forward the survey request to all of their mathematics, science, English, and social studies teachers. If all of the principals that the researcher contacted forwarded the e-mail to all of their core teachers, approximately 350 teachers would have received the request to complete the on-line survey.

Principals received an e-mail about the nature of the survey, including a direct link to the survey website and a request to forward on to their core teachers, on

November 11, 2011. Ten days later, on November 21st, 2011 a follow-up e-mail was sent to principals. Then, a third and final e-mail reminder was sent on November 30th, 2011. The survey site was open for approximately one month, closing on December 9th, 2011. A total of 34 teachers completed the on-line survey. In addition, participants were allowed to make themselves available for a follow up interview. Three teachers initially agreed to a follow-up interview, although only two of those three teachers followed up and completed the interview.

Though the response rate of 10% was low, a low response rate is typical for a web-based survey (Nair & Adams, 2009; Shih & Fan, 2009). In a meta-analysis of multiple large studies, Shih and Fan (2009) found that the average response rate to email surveys was 33%. Additionally, the standard deviation for this meta-analysis was 22%. Hence, Shih and Fan found studies with response rates as low as 11% that were still within one standard deviation of the mean. The researcher would also note that the response rate for this study may have been lowered by the fact that the researcher relied on Nebraska principals to forward the survey on to their teachers.

E-mail addresses for principals were obtained from the Nebraska School Activities Association. The researcher then relied on high school principals to forward the survey request and link to all of their mathematics, science, English, and social studies teachers. The researcher has no way of knowing how many principals actually forwarded their survey on to their mathematics, science, English, and social studies teachers.

Mathematics, science, English, and social studies teachers were selected because the researcher wanted to elicit responses from all core classes to see if there were differences between specific academic subjects, school sizes, and teacher experiences.

Trouteaud (2004) studied methods for improving response rates on web-based surveys. Trouteaud argued that the style and number of invitation and reminder emails were vital to increasing response rates. Trouteaud claimed the optimal number of reminders was two, and this is the same number of reminders this researcher utilized for this study. Also, Trouteaud (2004) reported that if the correct style of invitation and the use of two reminder e-mails were utilized, the response rate reached as high as 24%. In comparison, if all principals forwarded the survey to all of their mathematics, science, English, and social studies teachers, this particular study had a response rate of just under 10%.

Of the 34 survey respondents, 19 self-identified as male, 12 self-identified as female, while 3 did not respond (see Table 1). Of the 34 respondents, nearly half (15) had 21+ years of experience, while none of the respondents had five or fewer years in education (see Table 2). There was a wide variety of school sizes represented by the respondents; nine respondents had fewer than 100 students in their building, five had between 100-199 students, five had between 200-299 students in their building, five had between 300-399 students in their building, and seven had 400+ students in their building (see Table 3). In addition, all four subject matters were represented by six mathematics teachers, five science teachers, eight English teachers, and eleven social studies teachers who responded to the survey (see Table 4).

Table 1

Gender

Male	Female
19	12

Table 2

Number of Years in Education

0-5 Years	6-10 Years	11-15 Years	16-20 Years	21+ Years
0	4	6	15	6

Table 3

Total 9^{th}-12^{th} Grade Students in Building

Less than 100	100-199	200-299	300-399	400+
9	5	5	5	7

Table 4

Primary Teaching Assignment

Mathematics	Science	English	Social Studies
6	5	8	11

Likewise, all NSAA classifications were represented, with 7 from Class A, 5 from Class B, 8 from Class C1, 2 from Class C2, 4 from Class D1, and 5 from Class D2 (see Table 5). The vast majority of respondents had advanced degrees, with only one respondent holding only a bachelor's degree. Six respondents had a bachelor's

Table 5

NSAA Classification

A	B	C1	C2	D1	D2
7	5	8	2	4	5

degree+18, 9 had a master's degree, and 15 had a master's degree + 18 (see Table 6). In addition, 25 of the respondents indicated that it had been 5 or fewer years since their last graduate-level course, 3 indicated that it had been 6 to 10 years, 1 indicated that it had been 11 to 15 years, one that it had been 16 to 20 years, and one that it had been 21+ years since their last graduate level course (see Table 7). Of the 31 respondents, 29 taught in a public school, while 2 taught in a private school (see Table 8). Lastly, 19 marked that they had professional learning teams in their school, while 11 did not (see Table 9).

Table 6

Highest Level of Education Attained

Bachelor's	Bachelor's +18	Master's	Master's + 18
1	6	9	15

Table 7

Total Years Since Last Graduate-level Course

0-5 Years	6-10 Years	11-15 Years	16-20 Years	21+ Years
25	3	1	1	1

Table 8

Private or Public

Private	Public
2	29

Table 9

Professional Learning Teams Utilized

Yes	No
19	11

The researcher asked teachers to identify the four most successful strategies the teacher uses with students. In *Classroom Instruction that Works,* researcher Robert Marzano and colleagues 92001) identified nine instructional strategies that, when used consistently and systematically, had the largest effect size on improving student learning. The researcher based the selection of instructional strategies on the work of Robert Marzano and colleagues (see Figure 1).

Number of instructional strategies regularly used with students. The researcher asked respondents to determine how many strategies they regularly use with their students. Researcher and author Janie Pollock (2007) wrote about the importance of using proven instructional strategies consistently and systematically (see Figure 2).

Of the 34 teachers who took the survey, 29 responded to the questions of how many instructional strategies they regularly use with their students. The highest response came from the 19 or 65% of respondents who said that they regularly use 3 to 4 strategies

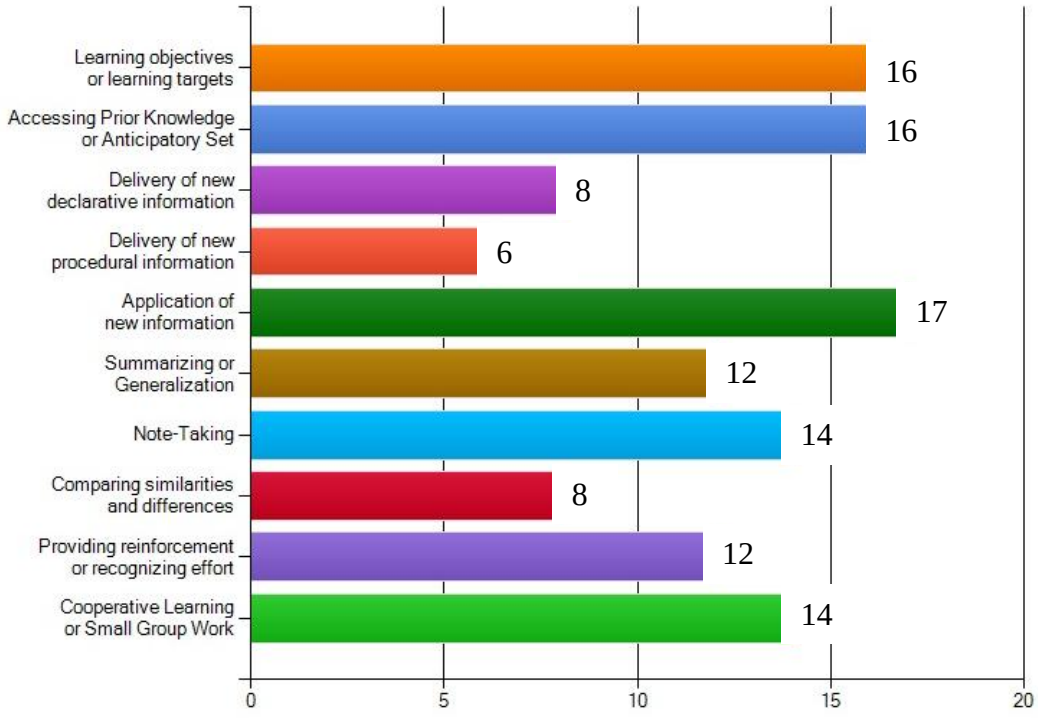

Figure 1. Most successful instructional strategies used with students.

with their students. One teacher marked that he or she only use 0 to 2 strategies regularly with their students, 5 or 17% indicated that they regularly use 5 to 6 strategies with their students, while 4 or nearly 14% indicated that they regularly used more than 6 strategies with their students.

Knowledge of instructional strategies. The researcher wanted to find out how knowledgeable teachers are with certain instructional strategies. It was necessary to find out what teachers thought they knew in order to determine if there was a knowing gap and the teachers simply did not know the particular strategy. Or, if in fact there was a knowing-doing gap in which the teacher knew the strategy but did not utilize it. In

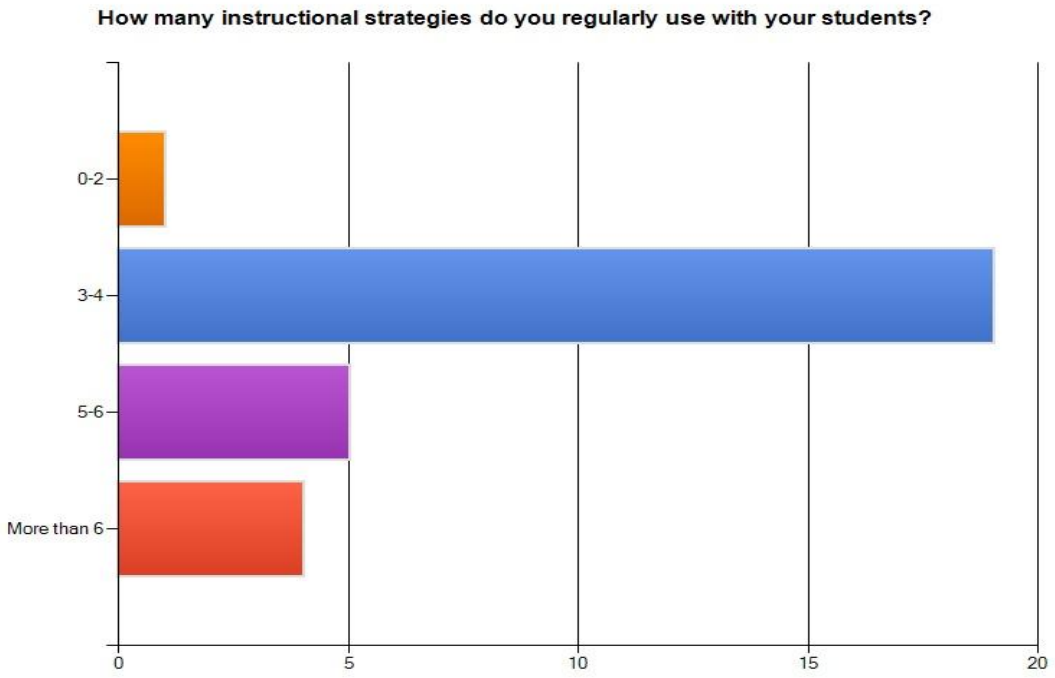

Figure 2. Number of instructional strategies regularly used with students.

addition, it is clear that engaged students are better learners. In order to engage students, teachers need to know and use a variety of instructional strategies (see Figure 3).

Of the nine instructional strategies, only two of the strategies were marked as do not know by any of the respondents. The strategies were delivery of new declarative knowledge and delivery of new procedural knowledge. Both of these strategies were marked "do not know" by three teachers. These two strategies also had one teacher indicate that they were not knowledgeable with this strategy and both of these strategies had one teacher mark that they had very little knowledge with these strategies. It is unclear to the researcher if this is because they truly do not have knowledge of these strategies or if they are unfamiliar with the terminology.

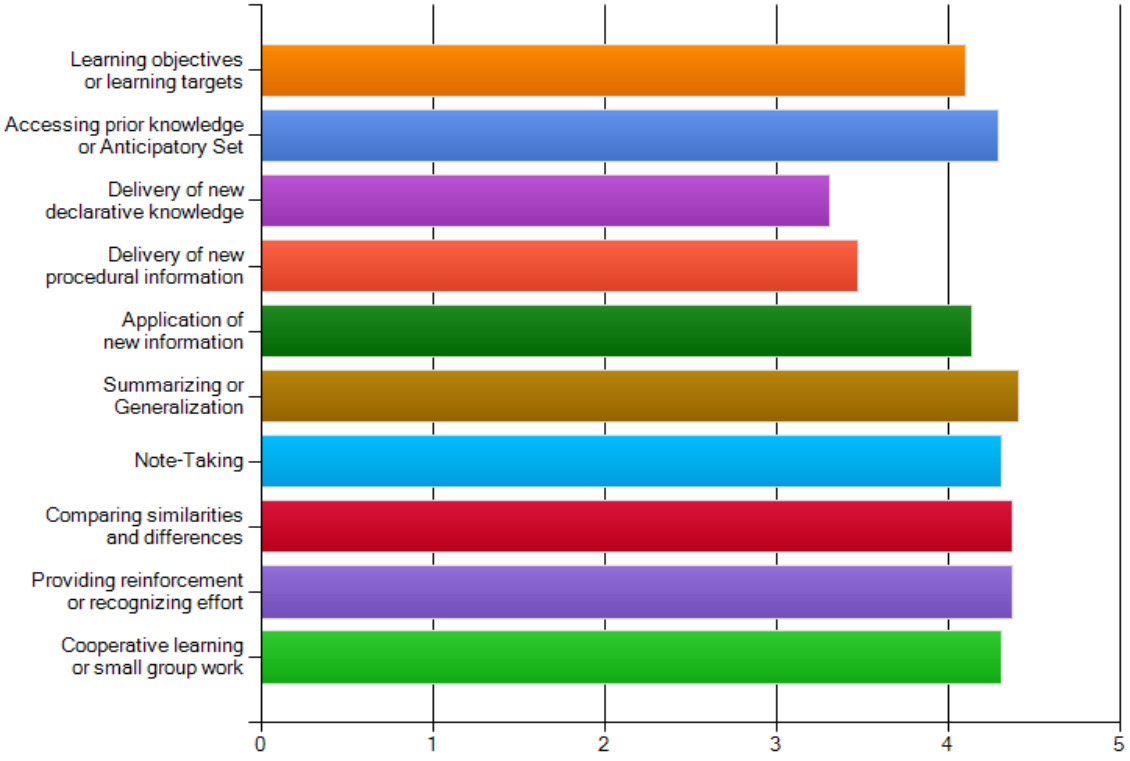

Figure 3. Knowledge of instructional strategies.

In addition, accessing prior knowledge or anticipatory set, as well as cooperative learning or small group work had only one teacher indicate that he or she had very little knowledge with these strategies. All other teachers marked all of the other instructional strategies as neutral, knowledgeable or very knowledgeable.

In fact with all of the other strategies 89.6% to 96.6% of teachers identified their knowledge between as knowledgeable or very knowledgeable including learning objectives or learning targets, accessing prior knowledge or anticipatory set, application of new information, summarizing or generalization, note-taking, comparing similarities and differences, providing reinforcement or recognizing effort, and cooperative learning

or small group work. The strategies that received the most very knowledgeable responses were summarizing or generalization with 48.3% of the teachers perceiving they were very knowledgeable, and 44.8% of the teachers indicating they were very knowledgeable with cooperative learning or small group work.

Where instructional strategies were acquired. The researcher wanted to find out where teachers thought they acquired their instructional strategies. This was important to find out because there are scarce resources being spent on teacher development and it is important to find out where teachers are acquiring their instructional strategies. This information could be useful to colleges, superintendents, staff development teams, etc.

Three of 29 teachers (10.3%) indicated that they acquired none of their strategies from their experiences as an undergraduate student, while 4 of 29 (13.8%) indicated that they acquired none of their strategies from their cooperating teacher or student teaching experience. This means that nearly 25% of respondents indicated that they acquired none of their current instructional strategies from their undergraduate work or from their cooperating teacher or student teaching experience. Twelve of 29 respondents (41.4%) indicated that they acquired most of their strategies from their graduate classes. Also, 13 of 29 respondents (44.8%) indicated that they acquired some of their strategies from staff development in their school or district, and 14 of 29 respondents (48.3%) indicated that they had acquired some of their strategies from a special conference or speaker. In addition, one teacher marked that they had received all of their instructional strategies from a special conference or speaker. Lastly, 12 of 29 respondents indicated that they had acquired most of their strategies from their graduate classes (see Figure 4).

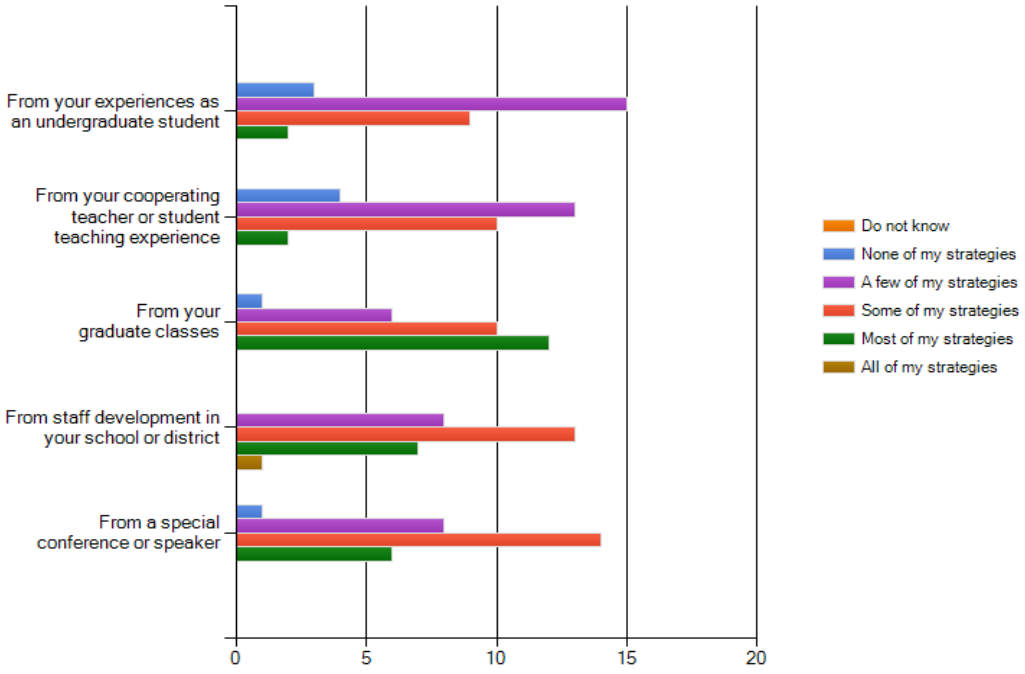

Figure 4. Where instructional strategies were acquired.

How often instructional strategies were utilized. The researcher wanted to find out more specifically how often teachers utilized specific instructional strategies in their classroom. This was important in order to find out if there was just a knowing gap or, if in fact, there was a knowing-doing gap. In other words, did teachers know certain strategies and yet not use them on a consistent and systematic basis?

Delivery of new procedural information had the lowest rating, with only 6 of 29 respondents indicating that they deliver new procedural information frequently or always. Likewise, 4 out of 29 teachers marked that they did not know how often they used new procedural information. The second lowest response rate was on cooperative learning or small group work, with only 13 out of 29 (44.8%) teachers indicating that they used this strategy frequently or always. The highest response rate came from providing

reinforcement or recognizing effort, with 24 out of 29 (82.8%) respondents indicating they frequently or always provide reinforcement or recognize effort. Next came application of new information, with 20 out of 29 (69%) teachers saying that they used this strategy frequently or always. This is the same response rate as learning objectives or learning targets. Accessing prior knowledge or anticipatory set are strategies in which 18 out of 29 (62.1%) respondents indicated that they used this strategy frequently or always (see Figure 5).

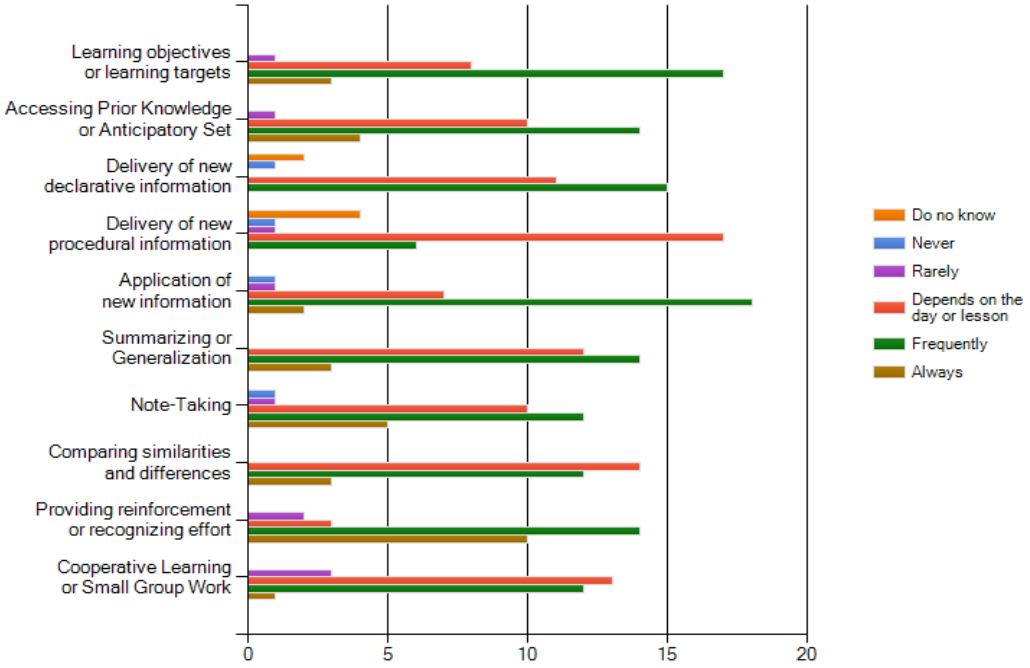

Figure 5. How often instructional strategies were utilized.

Which instructional strategies are you interested in acquiring more knowledge about. The researcher also sought to find out if teachers were interested in acquiring new knowledge about certain instructional strategies. The researcher asked

teachers to identify how interested they were in acquiring new knowledge about specific instructional strategies.

For every instructional strategy, at least 48% of the respondents indicated they were either interested in acquiring more knowledge or very interested in acquiring more knowledge. The two lowest responses (48%) were on summarizing or generalization and note-taking. The two instructional strategies that had the largest number of teachers (63%) saying they were interested in acquiring more knowledge or very interested in acquiring more knowledge were providing reinforcement or recognizing effort and cooperative learning or small group work (see Figure 6).

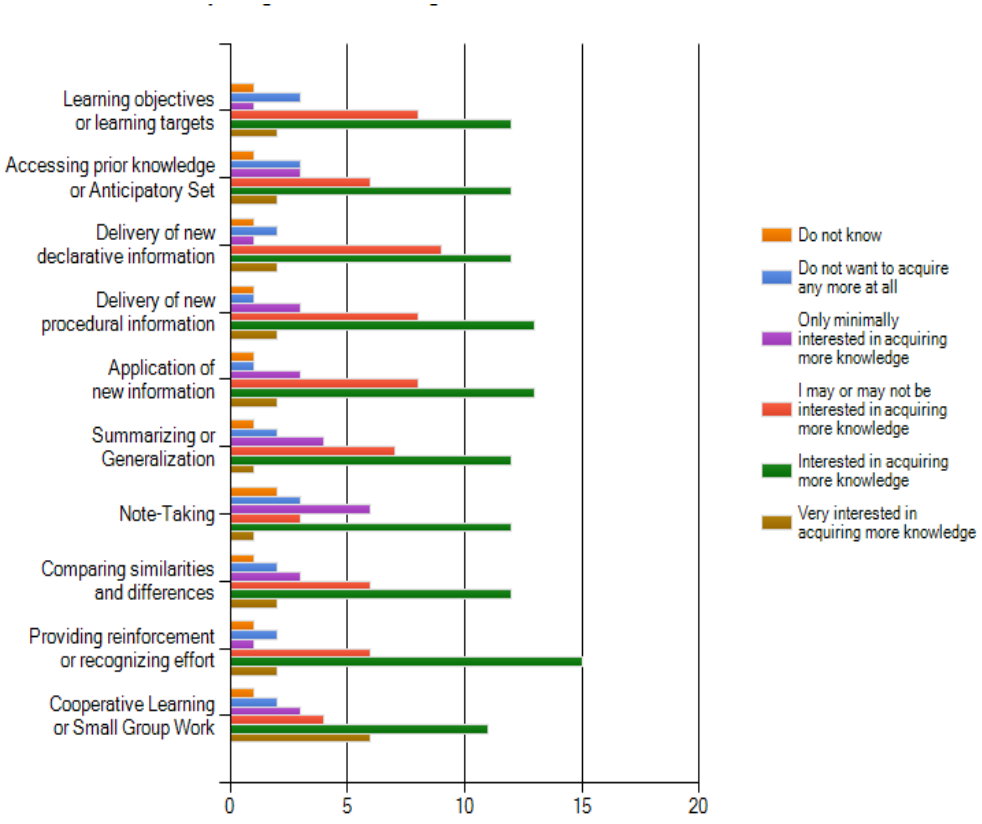

Figure 6. Which instructional strategies are you interested in acquiring more knowledge about.

How do teachers test the effectiveness of their instructional strategies. The researcher wanted to find out how teachers test the efficacy of their practices. That is to say, the researcher wanted to know how teachers determined if the instructional strategies they are using in their classroom actually work (see Figure 7).

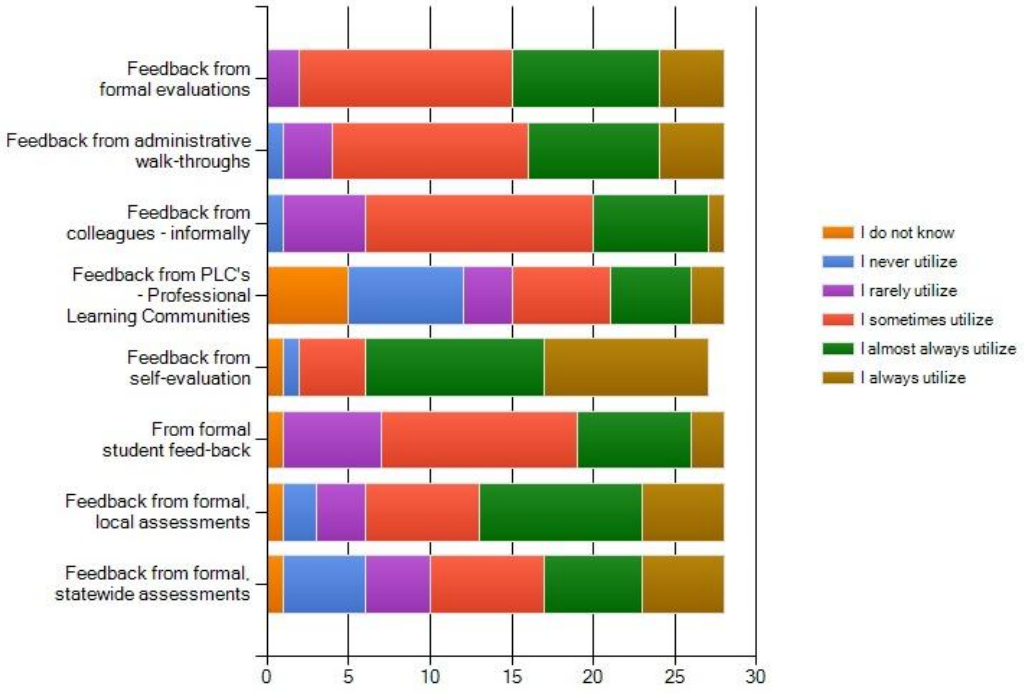

Figure 7. How do teachers test the effectiveness of their instructional strategies.

There was a wide variation on how teachers determined how effective their instructional strategies were. Only 25% of respondents indicated they almost always or always utilized feedback from PLC's-Professional Learning Communities, while 77.7% of teachers say they almost or almost always use feedback from self-evaluation to determine how effective their instructional strategies are. The second lowest response rate came on informal feedback from colleagues, where only 28.6% of teachers indicated they always or almost always utilize feedback from their colleagues. Likewise, only

32.1% of teachers say they always or almost always utilize formal student feedback to determine how effective their strategies are. The second highest response rate came from feedback from formal, local assessments at 53.6%. The researcher would also note that 46.4% of teachers utilize feedback from formal evaluations and 42.9% utilize feedback from administrative walkthroughs. Last, 39.3% of teachers indicate they almost or almost always utilize feedback from formal, statewide assessments to determine how effective their instructional strategies are.

In addition, the researcher asked six open-ended questions detailed below. Question 18 asked teachers to identify instructional strategies that they use on a consistent and systematic basis that were not mentioned in the survey. Eight teachers reported out the following responses:

1. Class discussions, quickwrites, journals, video-powerpoint
2. Questioning techniques, discussion strategies
3. Questioning techniques to get maximum involvement
4. Material review games
5. Time on task, wait time extended and interaction sequence bell ringers, closure, check for understanding
6. Integration of technology
7. Self application to student, modeling, case studies
8. Try to figure out the best strategy for each student and target their strengths

Question 19 asked teachers to identify what strategies they use occasionally that were not mentioned in the survey. Five teachers reported out the following:

1. Quickwrites/freewrites, journals, powerpoint
2. Bonus to maximize standardized test scores
3. Student-led technology projects (wikis, prezis, etc.)
4. On-the-clock
5. Drill work with students

Question 20 asked if teachers would be willing to be contacted for a follow-up interview. Three individuals gave their name and/or e-mail addresses. The researcher contacted all three of them. Two were willing to conduct a follow-up interview. The researcher attempted to contact the third teacher on three different occasions and did not receive any kind of reply.

Question 21 asked respondents to identify any instructional strategies that were not mentioned in the survey that they would like to know more about. Three teachers responded with the following:

1. More information for effective visual presentations
2. Debate
3. Learning more about conversation to maximize student decision making. (i.e. Jim Faye Seminars if still happening out of Colorado.)

Question 22 asked teachers to identify ways that were not mentioned in the survey, that teachers have learned various learning strategies. Five teachers responded with the following:

1. Contract learning/learning levels
2. I teach in pairs

3. Experience. Focusing on ways to help students to understand their mathematicsematics not just memorize procedures. Hold them accountable by requiring work and grading work just answers on tests.
4. Internet sources. Teachers/friends from other districts and schools
5. Professional development group throughout the state of Nebraska that was brought about by grant money (NMPDS).

Question 23 asked teachers to identify if there was somewhere they had learned specific instructional strategies that were not mentioned in the survey. Four teachers responded with the following:

1. Workshops (Jim Fay)
2. Analyzing text book method and redoing to make it more clear and understandable. An example lately was the inverse trigonometric sine function and its derivative.
3. NMPDS professional development series.
4. READING

From the quantitative portion of the study the researcher was able to identify six significant findings: how many instructional strategies teachers regularly use with their students, how knowledgeable teachers are of various instructional strategies, where teachers say they acquire their instructional strategies, teachers want to acquire more instructional strategies, what teachers say they use to test the efficacy of their practices, there is a gap between what teachers say they know and what teachers actually do in their classroom (Appendix D).

Of the 34 teachers who took the survey, 29 respondents answered the question "how many instructional strategies do you regularly use with your students?" (see Figure 2). Sixty-five percent of those respondents indicated that they regularly use 3 to 4 strategies with their students, while an additional 17% indicated they regularly use 5 to 6 and 14% said they regularly use more than 6 strategies with their students. Only 1 of the 29 respondents indicated that they only used between 0 and 2 strategies regularly with their students. According to the survey teachers are indicating that they regularly use multiple instructional strategies with their students.

Of the 9 instructional strategies, only 2 of the strategies were marked as "do not know" by any of the respondents. The strategies were delivery of new declarative knowledge and delivery of new procedural knowledge. Both of these strategies were marked "do not know" by 3 teachers. These 2 strategies also had 1 teacher indicate that they were not knowledgeable with this strategy and both of these strategies had 1 teacher mark that they had very little knowledge with these strategies. It is unclear to the researcher if this is because they truly do not have knowledge of these strategies or if they are unfamiliar with the terminology.

In addition, accessing prior knowledge or anticipatory set, as well as cooperative learning or small group work had only one teacher indicate that he or she had very little knowledge about these strategies. All other teachers marked all of the other instructional strategies as neutral, knowledgeable, or very knowledgeable.

In fact with all of the other strategies 89.6% to 96.6% of teachers identified their knowledge between as "knowledgeable" or "very knowledgeable" including learning objectives or learning targets, accessing prior knowledge or anticipatory set, application

of new information, summarizing or generalization, note-taking, comparing similarities and differences, providing reinforcement or recognizing effort, and cooperative learning or small group work. The strategies that received the most very knowledgeable responses were summarizing or generalization, with 48.3% of the teachers perceiving they were "very knowledgeable", and 44.8% of the teachers indicating they were "very knowledgeable" with cooperative learning or small group work.

In identifying where teachers acquired their instructional strategies, teachers ranked highest graduate classes (75.9%), a special conference or speaker (69%), and staff development in school or district (68.9%). Likewise, teachers ranked lowest undergraduate classes (37.9%) and student teaching experience (41.4%). For the purpose of this study the researcher identified where teachers acquired their instructional strategies by utilizing the responses "some of my strategies" and "most of my strategies."

For purposes of determining which strategies teachers would like to learn more about the researcher identified those strategies in which the respondents said they were "interested in acquiring more knowledge" or "very interested in acquiring more knowledge." On all ten strategies the majority of teachers indicated they were interested in learning more about the various strategies. The highest response rate came on cooperative learning/small group work (62.9%) and providing reinforcement/recognizing effort (63%). All instructional strategies would have been 11.1% to 33.3% higher if the researcher included those respondents who identified that "I may or may not be interested in acquiring more knowledge."

From the survey the researcher was able to determine that teachers test the efficacy of their practices in a variety of ways. For the purposes of this study the

researcher examined what percentage of teachers identified the method as one they "almost always use" or "always use." The data showed the most common ways for teachers to test the efficacy of their practices is from self-evaluation (77%). The second most common method was through feedback from formal, local assessments (53.9%). Both of these methods were more commonly utilized than feedback from administrative walk-throughs (42.9%) and formal evaluations (46.4%).

On every specific instructional strategy, teachers in the survey indicated they knew a strategy at a much higher rate than what they actually do in the classroom as summarized in Table 10: (Note: the researcher classified "knowing" if the teachers self-identified that strategy as "knowledgeable" or "very knowledgeable." The researcher classified "doing" as "frequently" or "always".)

A number of factors inhibited the ability of this study to make valid inferences from a very small sample of a population. Some of the factors include non-response error and survey-fatigue. Non-response error occurs when the survey fails to get a response on one or more of the questions. Non-response error can affect the survey in two ways. First, it decreases the amount of data available to the researcher. Second, a bias is introduced to the extent that respondents differ from non-respondents within a selected sample. The researcher tried to minimize this non-response error factor by limiting the number of questions and by emphasizing that all responses would remain anonymous. Another factor that inhibited the ability of this study to make valid inferences is the possibility of only a few principals actually forwarding the survey to their teachers. The researcher tried to minimize this factor by sending out a follow-up e-mail to all of the principals who were initially contacted. A final factor that inhibited the ability of this

Table 10

Instructional Strategies: Knowing-Doing Response Rates

Strategy	"Know" Response Rate	"Do" Response Rate
1. Learning objectives or learning targets	89.7	68.9
2. Accessing prior knowledge or anticipatory set	92.9	62.1
3. Delivery of new declarative information	62.0	51.7
4. Delivery of new procedural information	69.0	20.7
5. Application of new information	93.1	69.0
6. Summarizing or generalization	93.1	58.6
7. Note-taking	96.6	58.6
8. Comparing similarities and differences	96.6	51.7
9. Providing reinforcement or recognizing effort	93.1	82.8
10. Cooperative learning or small group work	89.6	44.8

study to make valid inferences includes teacher feelings of embarrassment over individual teaching practices. It is possible that many teachers lack formal or current instructional strategies and are uncomfortable acknowledging that. It is also possible that teachers would be uncomfortable acknowledging that they do not regularly use strategies.

For the qualitative portion of the study, one of the respondents was male, and one was female. Both of these teachers have at least 32 years experience in education and hold advanced degrees. One of the teachers has 41 years of experience. One of the teachers is a mathematics teacher while the other teaches English. Because only two of the respondents were willing to participate in a follow-up interview it is difficult to identify themes. However, from the interviews the researcher was able to identify seven common ideas:

1. Teachers need time for development
2. Staff development/teacher training that is usable and valuable
3. Need for student engagement
4. Students understanding rather than memorizing
5. Importance of using a variety of instructional strategies
6. Teachers want to improve their strategies for advanced students
7. Improving instruction through feedback – administrator and student

Idea 1—Teachers need time for development. Many educators would agree that today's students are different from earlier students. As Janie Pollock stated in *Improving Student Learning One Teacher at a Time* (2007),

> Today's classrooms are a different place. We celebrate diversity and opened the doors of public schools to all children, regardless of race, origin, ability, socioeconomic status, or gender. Appropriately, the focus of our curriculum has expanded to suit this more varied student population, and our school improvement efforts are driven by a commitment to help all the students in our classrooms learn and make progress. (p. 16)

If we agree that our students are different than they were in years past, then it would make sense that our teachers have to be able to change and adapt as well. Author and trainer Marc Chun interviewed Katricia Pierson who is the associate dean for academic assessment and an assistant professor of English at William Woods College who said "The challenge is getting faculty to see what they are doing in the classroom isn't working . . . I do think students are not the same as ten years ago. They have to *do*, not just sit and listen" (Chun, 2010, p. 28).

This importance for teachers to change and adapt is further amplified by the premise that teachers today simply teach the same way teachers were taught by their own

elementary and secondary teachers (Stigler & Hiebert, *The Teaching Gap*, 1999; and *The Learning Gap* by Stevenson & Stigler, 1992). As Janie Pollock (2007) sets forth,

> When we were sitting in classroom as students, day after day, year after year, we were building and solidifying neural networks that defined for us what teaching was. These patterns of thought made it difficult for us to significantly change our pedagogical behaviors once we started teaching. So, if we learned to teach from our teachers, and they learned to teach from their teachers, and so on, one could argue that many of us today have teaching habits that stretch back to the 1950's-instructional, assessment, grading, and record-keeping strategies inherited from teachers who were responsible for instructing only half of today's students, both in terms of numbers and demographics. (p. 17)

As Joyce (Participant #2) noted, "a lot of it was just methods. And kids are so different than they were 20 years ago. They're just totally different. And it just doesn't always work today" (Participant #2, personal communication, March 12, 2012). Teacher and author Rebecca Johnson (2010) also reasoned that many teachers simply teach how they were taught. Johnson contended "Until recent reforms, pre-service teacher raining consisted solely of applied performance lessons, rather than courses about how to teach – which led to intuitively teaching as one was taught" (p. 46). Shulman argued that in order to better prepare teachers we need to take a new approach to teacher assessment (Shulman, 1987). The assessment we use in teacher preparation courses must align and correspond with appropriate models of excellent instruction and assessment. These assessments must be valuable for the candidates being prepared. Again, if we agree that students are different than they were in years past, educators have to be willing to make changes themselves. And, if we expect current teachers to make significant changes to their pedagogy, we have to create time for them to make changes.

Many teachers want to improve their pedagogy. As Joyce noted, she wants to be able to incorporate strategies for keeping students engaged and being able to differentiate

her instruction for upper level students, but a *lack of time* keeps her from making those changes to her classroom. As Joyce said, "readings for the students who maybe aren't engaged in learning as much. I'd like to incorporate maybe a variety of requirements instead of the whole class doing basically the same thing" (Participant #2, personal communication, March 12, 2012). The time issue is made even more acute when one realizes that in addition to her teaching duties, Joyce has to create her own assessments, stating that "I create my own assessments" (Participant #2, personal communication, March 12, 2012). Pointing out how difficult assessment writing is for new teachers, she contends "And then, it's hard for some of the new ones" (Participant #2, personal communication, March 12, 2012).

Participant #1, James, also noted the importance of time for teachers to learn and incorporate new instructional strategies into their daily practices. James talked about his most effective teacher training that took place in an advanced degree program that took three summers to complete, stating

> they had to take 60 mathematics teachers, and I was fortunate enough to be one of those mathematics teachers. And they put it through 3 summers where we went through 5 weeks where we had to stay on campus, they put us through, and they basically, we basically got most of our Master's degree done through that program. (Participant #1, personal communication, March 12, 2012)

James noted the importance of this advanced degree program, saying "And we stayed together for the three summers. And so we would work off each other. So a lot of that stuff was, was tried and tested" (Participant #1, personal communication, March 12, 2012). But, James notes the problem he currently encounters is not having the time to test the efficacy of his practices, saying "Except at our school here. We don't have the time that we need to get like mathematics teachers together, you know, and we're pretty much

on our own" (Participant #1, personal communication, March 12, 2012). Again, if we expect teachers to make specific and lasting changes to their pedagogy, it is going to require time.

Idea #2 – Staff development/teacher training that is usable and valuable. As James argued the normal response of teachers to staff development is that staff development is not particularly useful, saying "Well, in the past, in the past, uh . . . most staff meetings were, if you've been an old-timer, you've heard the thing 'this too shall pass" (Participant #1, personal communication, March 12, 2012). However, James had seen a shift the last couple of years. Now, James says "these were people that when we do staff development, it's, it's purposeful" (Participant #1, personal communication, March 12, 2012). Furthermore, James stated, "even from years before when the coaches used to walk in with their hats on, and they'd sit in the back of the room with a newspaper with the sports page open at these meetings, which I experienced in Wisconsin; to now, where they're actually involved" (Participant #1, personal communication, March 12, 2012). Just like student engagement is key to student learning, staff engagement is key to teacher development.

James went on to lament the lack of effectiveness of traditional teacher preparation course work, saying,

> Well, the least effective training to be honest with you, was and now this is at one college, so I'm gonna pick point one college, but I think it happened all over . . . the education classes, were, were basically to me worthless. I mean they didn't teach me how to teach, they just went through all these theories . . . it never made any sense to us. We weren't getting anything about how to teach . . . but, so I'm kinda critical on education courses. (Participant #1, personal communication, March 12, 2012)

James did note that the exception to this is if teachers in training had a good experience student teaching. James argued the value of a positive student teacher experience, saying that it was valuable "if we got a good cooperating teacher" (Participant #1, personal communication, March 12, 2012).

James also stated that one of the best teachers he ever had used what he described as a type of modified mastery learning. It made such an impression on him that James has since used the concept of mastery learning in his own classroom, saying "cause I've always used that, mastering the concepts" (Participant #1, personal communication, March 12, 2012).

Participant #2, Joyce, told of the most effective staff development she received. Joyce said it was effective because it worked in the classroom. Joyce stated, "They were just such usable things. I've taken so many classes that are just ideas, and they don't really work. These just really made sense, and they worked very well" (Participant #2, personal communication, March 12, 2012). Joyce also bemoans the effectiveness of traditional teacher courses, saying, "I know a lot of what I learned in college was not useful. . . . The undergrad, and even some of the graduate classes, weren't very useful. They weren't real" (Participant #2, personal communication, March 12, 2012). Teachers are looking for staff development that is real and meaningful, where they can see measureable improvement in their students' learning.

Idea #3 – Need for student engagement. Defining positive student engagement is not a simple task. Newmann (1986) offered a possible definition when he said students are engaged when they "devote substantial time and effort to a task, when they care about

the quality of their work, and when they commit themselves because the work seems to have significance beyond its personal instrumental value" (p. 242).

It certainly seems logical that engaged students are going to improve their learning more than students who are not engaged in their learning. The research bears this out. In *Using Positive Student Engagement to Increase Students Achievement*, the authors claimed that "Engaged students also are more likely to perform well academically. Therefore, teachers need a large inventory of instructional strategies to engage a variety of students" (Garcia-Reid, Reid, & Peterson, 2005). The authors stated that cultivating a culture of achievement in the classroom is one method of enhancing student engagement. They argued this can be achieved by having a classroom where "instruction is challenging, students feel comfortable asking questions, and students are expected to do their best" (p.1). Akey (2006) confirmed the importance of a challenging curriculum by asserting that "When students feel challenged, they are less likely to be bored and disengaged." Weiss and Pasley (2004) argued that high quality instruction is a key factor in promoting a culture of engagement and achievement in the classroom. Weiss and Pasley suggested that high quality instruction is rigorous, aligned with content standards, and uses instructional strategies to meet the academic needs of all students.

Participant #1, James, stated that he holds students accountable for being engaged in their learning inside and outside of class saying, "I try to get them to the idea that they can do some work on the outside [of] class, and it's gonna pay off for 'em." James also said that if students are not doing work outside of class, he is going to challenge them to makes changes and complete work outside of class saying, "But because you didn't, we're gonna move into this with what you're gonna choose, and I'm gonna talk you

through ‘em, but we won’t get as much done as we could have” (Participant #1, personal communication, March 12, 2012).

Participant #2, Joyce also talked about the importance of student engagement. Joyce began each lesson with an opening activity designed to get students engaged. Joyce tried to keep students engaged throughout the lesson, saying “So I have to keep them moving. And, we usually take a break in the middle of the class. And I try to get as much feedback from them as I can to keep them engaged in learning” (Participant #2, personal communication, March 12, 2012). Joyce also talked about the importance of using good questioning techniques as a way to keep her students engaged. Joyce said, “I will directly ask them questions, and if they don’t know the answers, then we, we keep going, and they can ask someone else, or I will ask someone else, and then I’ll ask them to repeat it so that they’re, they’re engaged in that learning all the time” (Participant #2, personal communication, March 12, 2012).

Joyce also thought it was important to use various motivational strategies to help keep learners engaged in their learning. One of the strategies that Joyce employed is a quote a day on the board. In addition, Joyce believed it was important to explain to students why they are learning what they are learning as well as the value of using gimmicks and opening activities: “Telling hem how important it is to learn this and why we should learn it. And, the importance of opening activities, and the importance of gimmicks” (Participant #2, personal communication, March 12, 2012).

Idea #4 – Students understanding rather than memorizing. Participant #1, James, stated the importance of students learning rather than just memorizing. James said,

> Okay, the first thing is, is . . . strategy for me is to get the students to understand what they do, not just memorize. 'Cause in mathematicsematics, I myself, for numerous years, memorized how to get things done. In fact, I was good at it. And I could fool my teachers into thinking I knew what I was doing when I really did not. (Participant #1, personal communication, March 12, 2012)

James bemoaned the fact that in his own educational experience, he truly did not understand in a way that he could transfer what he memorized across the board with his other courses. James said,

> I took notes in class, and I went home and memorized those. Even in calculus class in college, when I first came to mechanical physics, 'cause I wanted to go into [engineering] when I first started college at Augustana College. I wanted to go into engineering. And I found out mechanical physics, after I got into that course, that the integration sign . . . I did not know what that was. I knew how to work it in calculus but I'm going what does it mean in physics. (Participant #1, personal communication, March 12, 2012)

James also said that one of his favorite teachers focused on the students actually understanding. Of this particular teacher of his, James says "she would teach from understanding. You knew what she wanted . . . she was the first person that, uh . . . that, that taught me how to do some paper writing, and actually make it make sense" (Participant #1, personal communication, March 12, 2012). Bottom line for James is that he wants students leaving his classroom who truly understand the concepts and principles of his classroom. James said, "I want the kids to understand what they're doing, not memorizing" (Participant #1, personal communication, March 12, 2012).

Joyce also talked about the importance of students understanding rather than memorizing. Joyce wrote her own assessments and said that she determines what to assess students on based on "what do I want them to remember forever" (Participant #2, personal communication, March 12, 2012). Joyce reasoned that if her students can remember it forever, they have indeed learned it and consequently understand it.

Idea #5 – Importance of using a variety of instructional strategies. In 2001, Robert Marzano and colleagues released *Classroom Instruction that Works*. This book provided a meta-analysis of 30 years of research on instructional strategies. Ultimately the research showed that there are nine strategies, which if used consistently and systematically, will have the largest positive effect size on improving student achievement. Both James and Joyce cited the importance of using a variety of instructional strategies.

Participant #1, James, stated that he uses a variety of questioning techniques to go along with his lecturing. James also has students come to the front board and complete work in front of the class while he uses a coaching technique, stating,

> Also another strategy we're using, which has worked for me in the last couple years, . . . working at the board, helping themselves, and I can come along beside them and look at what they're doing, and, and . . . coach. (Participant #1, personal communication, March 12, 2012)

Participant #2, Joyce, also stated that she uses a variety of instructional strategies. Joyce noted that she utilizes sharing pairs, small groups, opening activities, lecture, worksheets, questioning techniques and student feedback, saying "oh just a variety of activities. . . . And I try to get as much feedback from then as I can to keep them engaged in learning" (Participant #2, personal communication, March 12, 2012). Joyce also said that she utilizes lectures, videos and independent student reading: "I will perhaps lecture part of the time. If I show a video, there's usually a worksheet over it. We might do a dictionary activity; we might read for 20 minutes. I just like to do a variety of activities" (Participant #2, personal communication, March 12, 2012).

Idea #6 – Teachers want to improve their strategies for advanced students. American classrooms are filled with students who have a wide variance in their ability

levels. Both James and Joyce indicated a desire to improve their instructional strategies for their advanced students. James said that teaching higher level thinking skills is a goal of his: "Well, the one I'm working on right now is my goal. It's, um . . . I'm working on more and more how to teach higher level thinking skills. And, how much balance do you put between how much you do, and how much they do" (Participant #1, personal communication, March 12, 2012). James was also trying to have students move higher up Bloom's taxonomy, stating "And so, what I'm looking for is, for right now, this year, I'm working on analysis, which is breaking down, and then synthesis, which is putting it back together" (Participant #1, personal communication, March 12, 2012).

Participant #2, Joyce, would like to improve on differentiating instruction for all of her learners: "I think I'd like to be able to differentiate more in my regular English classes" (Participant #2, personal communication, March 12, 2012). More specifically, Joyce says, "Oh maybe have different word lists, different . . . readings for the students who maybe aren't engage in learning as much. I'd like to incorporate maybe a variety of requirements instead of the whole class doing basically the same thing" (Participant #2, personal communication, March 12, 2012)

Idea #7 – Importance of feedback. In *Improving Student Learning One Teacher at a Time* (2007), Janie Pollock argued the importance of feedback:

> In order for performance to accelerate or advance, one needs feedback on just-right criteria and the opportunity to apply or practice that performance again and again. Think about deciding to lose weight, save money, run a marathon, or meet some other personal goal. Research tells us that when someone makes a verbal New Year's resolution, the goal is generally dropped with in three weeks. Various organization recommend keeping written records of progress toward goals to use as personal feedback and using a buddy system or personal trainer. These approaches increase one's chances of hitting the mark because they ensure ongoing feedback. (p. 104)

For teachers to make sustained improvement in their pedagogy they have to get effective feedback.

Teachers test the efficacy of their practices a number of ways. Generally, testing the efficacy of their practices is simply receiving feedback on their practices. Teachers receive feedback from a variety of sources including themselves, their students, their colleagues, and their administrators.

Participant #1, James, said that he received feedback from his administrators though walkthroughs and formal and informal evaluations. With the administrative walkthroughs, James stated, "they'll come through if you ask them to look for these certain things. Then of course, along goes with that, along goes with that, the, the formal in-formal evaluations" (Participant #1, personal communication, March 12, 2012). James had also visited other classrooms as well as having other teachers visit his classroom, saying of another teacher: "And he had, he had just some techniques that I so, I thought were really good. So and I've had people come to my classes, and they look at my question techniques. So it's visiting classes and things like that" (Participant #1, personal communication, March 12, 2012). James stated that it is really important for someone else to observe his techniques. What he is doing in the classroom has to be measureable, saying: "Well you gotta measure-you gotta measure it. And a way of doing that is to, is, for the goals I have right now, I've gotta really have somebody come in and look at it" (Participant #1, personal communication, March 12, 2012). James was also a part of what he called a personal learning community from which he is able to garner some feedback.

In addition, James also receives feedback from his students. As an informal measure, James will simply observe his students to determine the effectiveness of his strategies saying, "And then of course, it's always your students, and how they respond. That would be me responding" (Participant #1, personal communication, March 12, 2012). Lastly, James looked for feedback from students who have gone on to college and come back and visit him. He looked for feedback from these students and wants to know well his classroom has prepared his students for college, stating, "I want them to come back and talk to me. And, so far when they come back, most of the time it's positive. Yeah, we're there, we understand what's going on; we can handle the mathematics at the university or wherever, you know, type a thing" (Participant #1, personal communication, March 12, 2012).

Participant #2, Joyce, also stated that she looks for feedback from her students. Joyce says that she looks for informal feedback from her students as well as more specific feedback from the students' formal assessments, stating,

> Well if it motivates the student, I have a good feedback right away. You know like, oh that was fun, or that was good. Or, um, I mean that tells me it motivated 'em. And then the assessments would tell me okay, did they understand that. (Participant #2, personal communication, March 12, 2012)

Conclusion

The purpose of this modified mixed methods study was to add to the body of knowledge on teacher pedagogy by specifically identifying what high school mathematics, science, English, and social studies teachers know and what they do in their classrooms. The researcher sought to find out what teachers know about effective instructional strategies and what teachers do in their classrooms. Because this was a modified mixed study, it is important that the results of this study be used appropriately.

This study was limited to secondary mathematics, science, English, and social studies teachers in one state. This study described what this population knows about effective instructional strategies and what this population is actually doing in their classrooms. Chapter Five presents a summary of the findings, discussion, and interpretation of the results by identifying specific recommendations and thoughts for future research.

Chapter Five

Summary, Discussion, Recommendations, and Future Research

Summary

This study examined what high school mathematics, science, English, and social studies teachers knew about effective instruction and if they actually used effective instructional practices in their classrooms. The purpose of this modified mixed methods study was to increase awareness about teachers' knowledge and use of effective instructional practices and to add to the body of knowledge on teacher pedagogy.

Increased emphasis on student achievement as well as research that indicates the teacher is the most important factor in improving student learning created a compelling need to examine what high school teachers knew about the use of effective instructional strategies and what instructional strategies they actually used in the classroom (Danielson, 2007; Marzano et al., 2001; Pollock, 2007; Schmoker, 2006; Stronge, 2002). There is a sufficient body of knowledge about research-based instructional strategies available to teachers (Danielson, 2007; Hattie, 2009; Marzano et al., 2001; Pollock, 2007; Stronge, 2002); however there is little research about the strategies teachers actually employ in their classrooms.

This study was guided by the following research questions:

1. What declarative pedagogical knowledge do teachers possess?
2. Where did teachers acquire their pedagogical knowledge (teaching tool kit)?
3. What declarative pedagogical knowledge are teachers missing?
4. Is there pedagogical knowledge that teachers are missing that they would like to acquire?

5. To what extent do teachers utilize the pedagogical knowledge they possess?
6. How do teachers test the efficacy of their practices?

Data was collected through the use of a web-based survey titled "What do teachers know and what do they do." This survey was created by the researcher (Appendix C). To collect data for the study, the researcher used Survey Monkey, an on-line survey and questionnaire tool. The researcher chose to use a web-based survey because it allowed participants some flexibility to respond to the survey anytime during the response window at times that were convenient for them.

Teachers were able to identify on the survey if they were willing to participate in a follow-up interview. Three teachers initially identified that they were willing to complete a follow-up interview. Of the three teachers who initially indicated they would be willing to participate in an interview, two responded to an e-mail request to schedule a time for the interview. The researcher sent a follow-up e-mail to the third respondent who indicated he or she would participate in a follow-up interview; however, that individual did not respond.

The survey population for this study consisted of high school mathematics, science, English, and social studies teachers in accredited schools in the state of Nebraska during the 2011-2012 school year. Mathematics, science, English, and social studies are considered core classes in U.S. curriculum. These four classes are foundational subjects at the heart of school curriculum. It is the core classes that are most significant on national standardized tests as well as transcripts for college admission. While all teachers may need to improve their instructional strategies, it is especially critical for core teachers. Teachers were selected because the researcher wanted to elicit responses from

all core classes to see if there were differences among specific core subjects, school sizes, and teachers' years of experience.

The researcher sought to identify teachers and enlist teachers for the study by first contacting principals throughout the state of Nebraska through e-mail. Principals were asked to discuss the survey with teachers in their building. Some of the principals did as the researcher requested; they passed the information on to teachers, and that is how the researcher obtained a sample of teachers in Nebraska schools. The researcher utilized a purposeful sample to identify schools that represented a representative sample of schools with small, medium, and large student populations as well as schools from a variety of geographical locations in the state of Nebraska. The state of Nebraska classifies its' schools based on the size of their student population. The researcher used the Nebraska School Activities Association (NSAA) classifications because the NSAA is responsible for separating schools into several classifications for inter-school competition (A, B, C1, C2, D1, D2) in student activities. The researcher sent an e-mail to selected high school principals that asked them to forward the survey request to all of their mathematics, science, English, and social studies teachers. If all of the principals who were contacted by the researcher would have forwarded the e-mail to all of their core teachers, mathematics, science, English, and social studies teachers, approximately 350 teachers would have received the request to complete the on-line survey.

Principals received an e-mail about the nature of the survey, including a direct link to the survey website and a request to forward the survey to their core teachers, on November 11, 2011. Ten days later, on November 21st, 2011 a follow-up e-mail was sent to principals. A third and final e-mail reminder was sent on November 30th, 2011. The

survey site was open for approximately one month, closing on December 9th, 2011. A total of 35 teachers completed the on-line survey. In addition, participants were invited to volunteer for a follow up interview. While three teachers initially agreed to participate in the follow-up interview; only two of the teachers followed up and completed the interview.

E-mail addresses for principals were obtained from the Nebraska School Activities Association. The researcher used this repository because different classifications of schools systems were easily identifiable. The researcher then relied on high school principals to forward the survey request and link to all of their mathematics, science, English, and social studies teachers.

A number of factors inhibited the ability of the researcher to make valid inferences from a very small sample of a population. Some of the factors include non-response error and survey-fatigue. Non-response error occurs when the survey fails to get a response on one or more of the questions. Non-response error can affect the survey in two ways. First, it decreases the amount of data available to the researcher. Second, a bias is introduced to the extent that respondents differ from non-respondents within a selected sample. The researcher attempted to minimize this non-response error factor by limiting the number of questions and by emphasizing that all responses would remain anonymous. A second factor that inhibited the ability of this study to make valid inferences is the possibility of only a few principals actually forwarding the survey to their teachers. The researcher attempted to minimize this factor by sending out a follow-up e-mail to all of the principals who were initially contacted. A final factor that inhibited the ability of this study to determine valid inferences included teacher feelings

of inadequacy or embarrassment with their individual teaching practices. It may be possible that some teachers lack formal or current instructional strategies and are uncomfortable acknowledging they lack such knowledge. It is also possible that teachers were uncomfortable acknowledging that they do not regularly use strategies identified in the literature review.

The researcher developed the "What do Teachers Know and What do Teachers do", a web-based survey (Appendix C), to collect data for this study. The survey, designed to gather information based on a review of the literature on instructional strategies that teachers employ, consisted of 22 items that are divided into seven sections. The first section included nine questions about teacher demographics. The questions in the next five sections were developed on a 6-point Likert scale. These sections were designed to ascertain what is that teachers know about effective pedagogy and what they actually do in their classrooms. The final section included six open-ended questions. This section allowed participants to share information and responses that the researcher may not have addressed when constructing the survey instrument.

Given the importance of the work of teachers to improve student learning and the amount of resources invested in teacher training and development, this modified mixed-methods study examined what teachers knew about effective instructional strategies and to what extent they used effective instructional strategies in their classrooms.

Analysis of the data provided useful information about what teachers knew about effective instructional practices and what practices they used in their classrooms. This study may be helpful for professional organizations, institutions of higher learning, educational service units, and central office personnel in their evaluation and

development of the next generation of educators. By clearly identifying what it is that teachers know and what they do in their classrooms, these organizations can more strategically identify teacher strengths and deficits, provide resources to remedy the deficits, and ultimately improve student learning in classrooms across the United States.

Discussion

The researcher conducted a modified mixed-methods study in order to identify whether high school mathematics, science, English, and social studies teachers understand the instructional strategies necessary to create an effective classroom and whether or not they use the instructional strategies in their classrooms. According to Creswell and Plano Clark (2007), the mixed-methods approach is superior because it provides a better understanding of research than if the researcher only utilized a quantitative or qualitative approach. The researcher is basing his discussion on the results from the survey as well as limited interviews with two teachers.

The quantitative portion of the study revealed six significant findings:

1. the number of instructional strategies teachers regularly used with their students,
2. the number of instructional strategies teachers indicated they knew about,
3. the sources from which teachers acquired their instructional strategies,
4. the desire of teachers to acquire additional instructional strategies,
5. the manner in which teachers test the efficacy of their practices, and
6. an indication that there may be a gap between what teachers say they know and what teachers actually do in their classroom (Appendix D).

Finding #1 – The number of instructional strategies teachers regularly used with their students. Of the 34 teachers who took the survey, 29 respondents answered the question "how many instructional strategies do you regularly use with your students?" (see Figure 2). Sixty-five percent of those respondents indicated that they regularly used three to four strategies with their students, an additional 17% indicated they regularly used 5 to 6, and 14% said they regularly used more than 6 strategies with their students. Only 1 of the 29 respondents indicated that they regularly used between 0 and 2 strategies with their students. According to the survey responses most respondents indicated that they regularly used multiple instructional strategies with their students.

Finding #2 – The number of instructional strategies teachers knew about. Of the nine instructional strategies, only two of the strategies were marked as "do not know" by any of the respondents. The strategies were:

1. delivery of new declarative knowledge, and
2. delivery of new procedural knowledge. Both of these strategies were marked "do not know" by three teachers.

One teacher indicated that they were 'not knowledgeable' with the delivery of new procedural knowledge. One teacher indicated that they had 'very little knowledge' with the delivery of new declarative knowledge or new procedural knowledge. It is unclear to the researcher if this was because they truly did not have knowledge of the strategies or if they were unfamiliar with the terminology.

One teacher indicate that he or she had very little knowledge of two strategies - accessing prior knowledge or anticipatory set and cooperative learning or small group

work. All other teachers marked all of the other instructional strategies as "neutral," "knowledgeable," or "very knowledgeable."

In fact, with each of the other strategies, 89.6% to 96.6% of teachers identified their level of knowledge as "knowledgeable" or "very knowledgeable" including learning objectives or learning targets, accessing prior knowledge or anticipatory set, application of new information, summarizing or generalization, note-taking, comparing similarities and differences, providing reinforcement or recognizing effort, and cooperative learning or small group work. The strategies that received the most "very knowledgeable'" responses were:

1. summarizing or generalization with 48.3% of the teachers perceiving they were "very knowledgeable", and
2. Cooperative learning or small group work with 44.8% of the teachers indicating they were "very knowledgeable."

The survey revealed that respondents were "knowledgeable" or "very knowledgeable" about a variety of instructional strategies.

Finding #3 – The sources from which teachers acquired their instructional strategies. According to the survey (see Figure 4) teachers stated they acquired instructional strategies through multiple sources including:

1. their experiences as an undergraduate;
2. from their cooperating teacher/student teaching experience;
3. from their graduate classes, from staff development provided by their school or district; and

4. from attendance at educational conferences or listening to presenters who addressed the instructional strategies issue.

According to the results of the survey, 75.9% of respondents indicated they had acquired some or most of their strategies from their graduate classes. Sixty-nine percent of respondents indicated they acquired some or most of their strategies from a special conference or speaker, while 68.9% indicated they had acquired some or most of their strategies from staff development in their school or district. In addition, 41.4% of respondents indicated they acquired some or most of their strategies from their cooperating teacher or student teaching experience while only 37.9% of respondents indicated they acquired some or most of their strategies from their experiences as an undergraduate student.

Further, 3 of the 29 teachers (10.3%) indicated they had acquired none of their strategies from their experiences as undergraduate students. Four of 29 (13.8%) indicated that they acquired none of their strategies from their cooperating teacher or student teaching experience. This finding indicates that nearly 25% of respondents in this study acquired none of their current instructional strategies from their undergraduate work or from their cooperating teacher or student teaching experience.

Finding #4 – The desire of teachers to acquire additional instructional strategies. For every instructional strategy, at least 48% of the respondents indicated they were either "interested" in acquiring more knowledge or "very interested" in acquiring more knowledge. The two lowest percentages were on summarizing or generalization and note-taking. With summarizing or generalization, 48.1% of respondents indicated they "may or may not be" interested in acquiring more knowledge,

were only “minimally” interested or “did not want to” acquire more knowledge. With note-taking, 44.4% of respondents indicated they “may or may not be” interested in acquiring more knowledge, were only “minimally” interested or “did not want to” acquire more knowledge. The two instructional strategies that had the largest number of teachers (63%) saying they were interested in acquiring more knowledge or very interested in acquiring more knowledge were providing reinforcement or recognizing effort and cooperative learning or small group work.

Finding #5 – The manner in which teachers test the efficacy of their practices. There was a wide variation on how teachers determined the effectiveness of their instructional strategies. Only 25% of respondents indicated they ‘almost always’ or “always” utilized feedback from PLC’s (Professional Learning Communities) while 77.7% of teachers indicated they “always” or “almost always” used feedback from self-evaluation to determine how effective their instructional strategies are. Respondents indicated that self-evaluation was the most utilized strategy to determine how effective their instructional strategies were. Respondents indicated that feedback from formal, local assessments was the second most utilized strategy (53.6%) to determine how effective their instructional strategies were. The researcher notes that 46.4% of teachers utilized feedback from formal evaluations and 42.9% utilized feedback from administrative walkthroughs. Last, 39.3% of teachers indicate they “always” or “almost always” utilized feedback from formal, statewide assessments to determine how effective their instructional strategies are. The second lowest response rate was on informal feedback from colleagues where only 28.6% of teachers indicated they “always” or “almost always” utilized feedback from their colleagues. Likewise, only 32.1% of

teachers say they "almost" or "almost always" utilized formal student feedback to determine how effective their strategies are.

Finding #6 – An indication that there may be a gap between what teachers say they know about instructional strategies and what teachers actually do in their classroom. On every specific instructional strategy, a higher percentage of teachers in the survey indicated they knew a strategy other than what they actually utilized in the classroom as summarized below: (Note: the researcher classified "knowing" if the teachers self-identified a strategy as "knowledgeable" or "very knowledgeable." The researcher classified "doing" as frequently or always.) Also, according to Agresti and Franklin (2009) the margin of error with a sample size of 30 would be 18.3%, which is to say that if this survey was replicated the researcher could expect results either 18.3% more or less than what the researcher had. In other words, any difference great than 36.6% could be considered statistically significant. Of the 10 strategies studied, 4 fell under this category: Delivery of new procedural information, note-taking, comparing similarities and differences, and cooperative learning/small group work (see Table 11).

From the qualitative results, the researcher identified seven common ideas. The common ideas were identified because both of the individuals interviewed shared specific data on the common ideas which included: Teachers need time for development, staff development/teacher training needs to usable and valuable, need for student engagement, importance of students understanding rather than just memorizing information, importance of classroom teachers utilizing a variety of instructional strategies, teachers want to improve their strategies for advanced students, and improving instruction through feedback (administrator and teacher).

Table 11

Instructional Strategies: Knowing-Doing Response Rates

Strategy	"Know"	"Do"	Difference
1. Learning objectives or learning targets	89.7	68.9	20.8
2. Accessing prior knowledge or anticipatory set	92.9	62.1	30.8
3. Delivery of new declarative information	62.0	51.7	10.3
4. Delivery of new procedural information	69.0	20.7	**48.3**
5. Application of new information	93.1	69.0	24.1
6. Summarizing or Generalization	93.1	58.6	34.5
7. Note-taking	96.6	58.6	**38.0**
8. Comparing similarities and differences	96.6	51.7	**44.9**
9. Providing reinforcement or recognizing effort	93.1	82.8	10.3
10. Cooperative Learning or Small Group Work	89.6	44.8	**44.8**

Idea 1 – Teachers need time for development. Today's classrooms are filled with a variety of learners (Pollock, 2007; Yelland, Cope, & Kalantzis, 2008). Teachers today are faced with a variety of responsibilities, including dealing with compliance issues on a variety of state and federal laws, especially as they pertain to assessments. In addition, classrooms today are filled with students who have special needs, speak various languages, and have various learning disabilities. Teachers need to be prepared for a classroom that serves a population that is increasingly diverse in terms of race and socio-economics. Joyce noted, "kids are so different than they were 20 years ago" (Participant #2, personal communication, March 12, 2012). It makes sense that the focus of the curriculum and staff development efforts have changed and are changing to meet the unique needs of today's students (Pollock, 2007). Joyce also noted that she wants to

make changes but a *lack of time* keeps her from making those changes to her classroom. James echoed these thoughts when he says "We don't have the time that we need to get like mathematics teacher together, you know, and we're pretty much on our own" (Participant #1, personal communication, March 12, 2012). If educators can agree that students are different than they were in years past, it would stand to reason that teachers today have to be able to adapt and change. For teachers to truly make lasting changes to their pedagogy they need time to change and commit these changes to lasting improvement in their pedagogy.

Idea 2 – Staff development/teacher training that is usable and valuable. With limited resources (time and money) available, it is imperative that teacher training be highly effective in helping teachers make real and lasting changes to their pedagogy. Hammond (1997) argued that in order to improve student learning, schools needed to improve the profession of teaching. Multiple writers and researchers have suggested that there are certain qualities that the most effective teachers possess (Danielson, 2007; Marzano, 2003; Marzano et al., 2001; Pollock, 2007; Saphier & Gower, 1997; Whitaker, 2004).

The researcher found some evidence that a teacher Knowing-Doing Gap may exist. From the survey (Appendix D), teachers indicated they were learning about highly effective teaching strategies, but they were not necessarily changing their every day practices and incorporating these strategies into their daily instruction. Furthermore, Jamesstated that his preparation courses "were basically worthless to me . . . we weren't getting anything about how to teach" (Participant #1, personal communication, March 12, 2012). Teacher preparation and staff development courses must focus on helping

teachers improve their teaching. Joyce argues this when she says her most effective staff development was effective "because it worked in the classroom" (Participant #2, personal communication, March 12, 2012). For staff development to be effective, it must be demonstrated that teachers are changing their practices and ultimately that teachers are helping students measurably improve their learning.

Idea 3 – Need for student engagement. Defining positive student engagement is not an easy task. Newman (1986) offered a definition when he stated students are engaged when they "devote substantial time and effort to a task, when they care about the quality of their work, and when they commit themselves because the work seems to have significance beyond its personal instrumental value" (p. 242). Research indicates that students who are engaged in their learning are going to improve their learning at a much higher rate than students who are not engaged. Robert Marzano's latest research backs this up when he stated, "The importance of engagement to academic achievement is almost self-evident and has been commented on by a number of researchers and theorists" (Marzano, 2007, p. 99). Joyce stated that she keeps students engaged by beginning each day's lesson with an opening activity, using good questioning techniques, taking a break in the middle of the lesson, and clearly explaining to students why it is important what they are learning (Participant #2, personal communication, March 12, 2012).

Idea 4 – Students understanding rather than memorizing. There are various definitions of learning. Marzano et al. (2001) defined learning as knowledge or a skill acquired. For teachers, student learning might be interpreted as what will my students *know* or *be able to do* when they leave my classroom. From the interviews the researcher

learned that James spent a lot of time memorizing information in college, but then really did not know how to apply it (Participant #1, personal communication, March 12, 2012). Joyce stated that she writes her own assessments and determines what to put on those assessments by asking herself "what do I want student to remember forever?" (Participant #2, personal communication, March 12, 2012).

Pollock (2007) argued that when teachers consistently and systematically utilize effective, research-based strategies students will significantly improve their learning. In preparing students for the 21st century we need to prepare students to face a multitude of challenges that will require much more than students simply memorizing information. In fact, information itself is available in abundance. Students need to be able to access that information and use it rather than just having it memorized.

Idea 5 – Importance of using a variety of instructional strategies. In 2001, Robert Marzano and colleagues released *Classroom Instruction that Works,* which provided a meta-analysis of 30 years of research on instructional strategies. Marzano's research enumerated 9 strategies, if used consistently and systematically, provide the highest level of student gains. These strategies include: Identifying Similarities and Differences; Summarizing and Note Taking; Reinforcing Effort and Providing Recognition; Homework and Practice; Nonlinguistic Representations; Cooperative Learning; Setting Objectives and Providing Feedback; Generating and Testing Hypotheses; and Cues, Questions and Advance Organizers. David Sousa (*How the Brain Learns*, 2006) stated that the brain loves novelty. Meaning, the brain is more engaged and the learner is more interested in the learning when the brain is exposed to a variety of learning strategies. Sousa's research would seem to indicate that teachers need to use a

variety of proven, research-based instructional strategies in their classrooms in order to keep students actively engaged in their learning.

Joyce said she tries to keep students engaged. Joyce stated "I try to get as much feedback from them as I can to keep them engaged in learning . . . I just like to do a variety of activities" (Participant #2, personal communication, March 12, 2012). James indicated that he uses a variety of questioning techniques to go along with his lecturing (Participant #1, personal communication, March 12, 2012).

Idea 6 – Teachers want to improve their strategies for advanced students. Today's classrooms are filled with students who have a wide variety of learning of learning abilities and instructional needs. While teachers appear to know a variety of different instructional strategies, teachers have also identified a desire to learn how to advance the learning of their highest achieving students. James stated "I am working on more and more how to teach higher level thinking skills" (Participant #1, personal communication, March 12, 2012). Joyce said she "would like to improve on differentiating instruction for all of her learners" (Participant #2, personal communication, March 12, 2012).

Idea 7 – Importance of feedback. In *Improving Student Learning One Teacher at a Time*, Janie Pollock (2007) argued the importance of feedback, stating:

> In order for performance to accelerate or advance, one needs feedback on just-right criteria and the opportunity to apply or practice that performance again and again. Think about deciding to lose weight, save money, run a marathon, or meet some other personal goal. Research tells us that when someone makes a verbal New Year's resolution, the goal is generally dropped with in three weeks. Various organization recommend keeping written records of progress toward goals to use as personal feedback and using a buddy system or personal trainer. These approaches increase one's chances of hitting the mark because they ensure ongoing feedback. (p. 104)

For students to improve their learning they need quality feedback that varies in type (written, verbal) and source (self, peer, teacher). Likewise, in order for teachers to improve their pedagogy they need quality feedback. Most teachers naturally respond defensively to administrators observing their classrooms. After-all, classroom observations have traditionally been tied to teacher appraisal rather than teacher improvement. Research (Danielson, 2007; Pollock, 2007) showed that teachers can and will improve their practices through effective feedback.

Teachers test the efficacy of their practices a number of ways. Generally, testing the efficacy of their practices is simply receiving feedback on their practices. Teachers receive feedback from a variety of sources, including themselves, their students, their colleagues, and their administrators.

Participant #1, James, indicated that he received feedback from his administrators though walkthroughs and formal and informal evaluations. With the administrative walkthroughs, James stated, "they'll come through if you ask them to look for these certain things. Then of course, along goes with that, along goes with that, the, the formal in-formal evaluations" (personal communication, March 12, 2012). James has also visited other classrooms as well as having other teachers visit his classroom, saying of another teacher: "And he had, just some techniques that I . . . thought were really good . . . and I've had people come to my classes, and they look at my question techniques." James stated that it is really important for someone else to observe his techniques, stating "for the goals I have right now, I've gotta really have somebody come in and look at it." James also is a part of what he calls a personal learning community from which he is able to garner some feedback.

In addition, James also received feedback from his students. As an informal measure, James simply observed his students to determine the effectiveness of his strategies saying, "And then of course, it's always your students, and how they respond" (Participant #1, personal communication, March 12, 2012). Lastly, James looked for feedback from students who have gone on to college and came back and visit him. He looked for feedback from these students and wants to know how well his classroom has prepared his students for college, stating, "I want them to come back and talk to me. And, so far when they come back, most of the time it's positive. Yeah, we're there, we understand what's going on; we can handle the mathematics at the university or wherever, you know, type a thing."

Participant #2, Joyce, also stated that she looks for feedback from her students. Joyce says that she looks for informal feedback from her students as well as more specific feedback from the students' formal assessments, stating,

> Well if it motivates the student, I have a good feedback right away. You know like, oh that was fun, or that was good. Or, um, I mean that tells me it motivated 'em. And then the assessments would tell me okay, did they understand that. (Participant #2, personal communication, March 12, 2012)

According to Pollock (2007), one of the keys to improving performance in any arena is feedback. James talked about the importance of other teachers coming in and giving him feedback on his teaching, saying

> Well you gotta . . . measure it. And a way of doing that is to, is, for the goals I have right now, I've gotta really have somebody come and look at it. So we have what they call walkthroughs, where they'll walk in and they'll just watch for 5, 10 minutes, you know. (Participant #1, personal communication, March 12, 2012)

James also talked about the importance of getting feedback from his students, saying

> But I also am very concerned when kids leave here, that they're . . . prepared to handle the college work. I want them to come back and talk to me. And, and so

> far when they come back, most of the time it's positive. Yeah, we're there, we understand what's goin' on; we can handle the mathematics at the university. (Participant #1, personal communication, March 12, 2012)

Joyce also talked about the importance of feedback (Participant #2, personal communication, March 12, 2012). It would stand to reason that teachers and administrators need to foster a better relationship where teachers see administrators as an ally in the effort to improve teacher pedagogy and ultimately student learning.

According to Creswell and Plano Clark (2007), the next step in a mixed-methods study is deciding how to mix the quantitative and qualitative data sets. Creswell and Plano Clark says, "Mixing is the explicit relating of the two data sets. A study that includes both quantitative and qualitative methods without explicitly mixing the data derived from each is simply a collection of multiple methods" (p. 83). According to Creswell and Plano Clark (2007) there are three overall strategies for mixing quantitative and qualitative data. The data sets can be merged, one can be embedded within the other, or they can be connected. For this study, the researcher chose to merge the data in an effort to formulate one recommendation.

Recommendations

Recommendation One – Focus on the importance of improving teaching.

Certainly the recruitment of quality teachers is important. However, there is some research that indicates most teachers simply copy the pedagogy they received going through their formal schooling (Pollock, 2007). James indicated that one of his best teaching strategies (modified mastery learning) was simply learned from whom he considered one of his best teachers. It is imperative that the improvement of *teaching* be paramount (Participant #1, personal communication, March 12, 2012).

Research is clear that a knowing-doing gap exists in many fields (Pfeffer & Sutton, 1999). Hattie (2009) argued that teachers have an abundance of information on instructional strategies, but that does not translate into instructional strategies used in the classroom and consequently the knowledge that teachers have does not necessarily translate into improved student learning. Blanchard et al. (2007) argued in *Know Can Do* that individuals in all walks of life are not suffering from a lack of knowledge, but rather an inability to actually use the knowledge they have acquired.

The focus of staff development and teacher training must be on helping teachers, schools, and school districts help teachers make systematic changes to teacher pedagogy. One of the findings from this study indicated that teachers wanted to improve their practices (Appendix D). The quantitative research showed that teachers place a higher emphasis on self-feedback than on feedback from their administrators. Perhaps teachers are looking at administrators as someone who does their formal appraisal once or twice a year, rather than someone who can help them improve their instructional strategies? Perhaps principals are not providing the support needed for teachers to take the risk of making long-term changes to their instructional strategies? Perhaps an environment has not been developed where continuous, sustainable improvement can take place? It is in this environment that risk-taking and innovation can take place.

Recommendations for Future Research

This modified mixed method study sought to identify what high school mathematics, science, English, and social studies teacher know about effective instructional strategies and what they do in their classrooms. Although it was difficult to

identify common themes by mixing the quantitative data with only two interviews, the following recommendations were formed.

Recommendation one – Future research needs to include many more participants. A researcher could first seek the permission of a building level principal and then contact the teachers directly. The researcher acknowledges that a larger sample would have made the study much more effective.

Recommendation two – Utilize focus interviews and observations with small groups of teachers. Again, a focus group interview process could have allowed the researcher to gain much richer data. Teachers say that they "know" certain strategies and that they "use" certain strategies. However, the researcher believes it would have been more effective to have been able to observe teachers over a period of time and then asked follow-up questions. For instance, when one of the respondents to the interview stated that "the administration was more involved," it would have been good for the researcher to ask a follow-up question to find out how the administrator was more involved and if that was helpful to the teacher in improving their pedagogy.

Recommendation three – Study the effectiveness of a school or school district adoption of specific instructional strategies. How successful are their teachers in adopting specific instructional strategies that the district has identified as being important for teachers to utilize? Does the strategy become a part of their formal tool kit or is it something teachers attempt immediately following training and then revert back to old strategies and methods. As secondary schools become more formal in their adoption of best practices, it would seem that it would be easier to conduct the research. Fullan (2001) described change as complex, and researchers could study the barriers to change

in a particular school district. Why or why not are teachers changing their practices? And, what can be done to support their change efforts?

Recommendation four - A fourth area of potential research would be to identify the specific instructional strategies teachers use most frequently and learn how teachers plan for the implementation of specific instructional strategies in their classrooms. After identifying the strategies the researcher could conduct follow up interviews with the teachers to determine where they learned the strategies and why they use them.

Recommendation five - A final point for future research would be why a teacher Knowing-Doing Gap exists. In other words, why don't teachers use what they know? And, if there are classrooms or even schools where the teacher Knowing-Doing Gap has been closed, how can that be replicated in a particular school, school district, and across the United States.

Finally, the researcher was interested in learning if there was a teacher Knowing Gap in the area of instructional strategies, or if there was a teacher Knowing-Doing Gap. The results of the study seem to indicate that teachers are fairly well versed about various instructional strategies. The issue may not be a matter of teacher knowledge; however, there appears to be a gap between what teachers know and what they actually do on a consistent basis in their classrooms.

References

Abell, S. K. (2008, August 13). Twenty years later: Does pedagogical content knowledge remain a useful idea? *International Journal of Science Education, 30*(10), 1405-1416.

Agresti, A., & Franklin, C. (2009). *Statistics: The art and science of learning from data* (2nd ed.). Upper Saddle River, NJ: Pearson Prentice Hall.

Akey, T. (2006). *School context, student attitudes and behaviors, and academic achievement: An exploratory analysis*. New York: MRDC.

Black, A. L., & Halliwell, G. (2000). Accessing practical knowledge: How? Why? *Teaching and Teacher Education, 16,* 103-115.

Blanchard, K., Meyer, P. J., & Ruhe, D. (2007). *Know can do!: Put your know-how into action.* San Francisco, CA: Berrett Koehler.

Breakthrough school improvement: An action guide for greater and faster results. (2005). Schaumburg, IL: National Study of School Evaluation.

Burton, R. A. (2008). *On being certain: Believing you are right even when you're not.* New York: St. Martin's Griffin.

Chun, M. (2010, March/April). Taking teaching to (performance) task: Linking pedagogical and assessment practices [Electronic version]. *Change*, *42*(2), 22-29.

Covey, S. R. (2004). *The 7 habits of highly effective people: Powerful lessons in personal change.* New York: Free Press.

Creswell, J., & Plano Clark, V. (2007). *Designing and conducting mixed methods research.* Thousand Oaks, CA: Sage.

Danielson, C. (2007). *Enhancing professional practice: A framework for teaching* (2nd ed.). Alexandria, VA: Association for Supervision and Curriculum Development.

Darling-Hammond, D. (2006). *Powerful teacher education: Lessons for exemplary programs*. San Francisco, CA. Wiley.

Davies O'Leary, J. (2010, April). Teaching as Leadership: Six traits of highly effective teachers. Education Matters. *Association of American Educators*, 1-3.

Daw, P. (2000). 'The gaps, I mean' – subject knowledge and the training of English teachers. *English in Education, 34*(2), 3-15.

DuFour, R., & Eaker, R. (1998). *Professional learning communities at work: Best practices for enhancing student achievement*. Bloomington, IN: Solution Tree Press.

Fullan, M. (2001). *Leading in a culture of change.* San Francisco, CA: Jossey-Bass.

Garcia-Reid, P., Reid, R., & Peterson, N. A. (2005, May). School engagement among Latino youth in an urban middle school context: Valuing the role of social support. *Education and Urban Society, 37*(3), 257–275.

Geerinck, I., Masschelein, J., & Simons, M. (2010, April 23). Teaching and knowledge: A necessary combination? An elaboration of forms of teachers' reflexivity. *Studies in Philosophy and Education, 29*(4), 379-393.

Gladwell, M. (2008). *Outliers: The story of success.* New York: Little, Brown.

Hallett, F. (2010, August). Do we practice what we preach? An examination of the pedagogical beliefs of teacher educators. *Teaching in Higher Education, 15*(4), 435-448.

Hammond, D. (1997). *The right to learn: A blueprint for creating schools that work.* San Francisco, CA. Wiley.

Hashweh, M. Z. (2005, June). Teacher pedagogical constructions: A reconfiguration of pedagogical content knowledge. *Teachers and Teaching: Theory and Practice, 11*(3), 273-292.

Hattie, J. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement.* New York: Taylor & Francis.

Hunter, M. (1994). *Enhancing Teaching*. New York: Alpha Books.

Johnson, R. G. (2010, June/July). What's new in pedagogy research. *Professional Resources*, pp. 46-47.

Johnson, S. (1998). *Who moved my cheese?* New York: Putnam.

Knight, A. T., Cowling, R. M., Rouget, M., Balmford, A., Lombard, A. T., & Campbell, B. M. (2007). Knowing but not doing: Selecting priority conservation areas and the research-implementation gap. *Conservation Biology, 22*(3), 610-617.

Kolis, M., & Dunlap, W. P. (2004, Summer). The knowledge of teaching: The K3P3 model. *Reading Improvement, 24*(2), 97-107

Korthagen, F. A. (2010, November). How teacher education can make a difference. *Journal of Education for Teaching, 36*(4), 407-423. Retrieved on November 12, 2010, from University of Nebraska Libraries.

Liesveld, R., Miller, J. A., & Robison, J. (2005). *Teach with your strengths: How great teachers inspire their students.* New York: Gallup Press.

Loughran, J., Mulhall, P., & Berry, A. (2008, August 13). Exploring pedagogical content knowledge in science teacher education. *International Journal of Science Education, 30*(10), 1301-1320.

Marzano, R. J. (2003). *What works in schools: Translating research into action.* Alexandria, VA: Association for Supervision and Curriculum Development.

Marzano, R. J. (2007). *The art and science of teaching: A comprehensive framework for effective instruction.* Alexandria, VA: Association for Supervision and Curriculum Development.

Marzano, R. J., Pickering, D. J., & Pollock, J. E. (2001). *Classroom instruction that works: Research-based strategies for increasing student achievement.* Alexandria, VA: Association for Supervision and Curriculum Development.

Maxwell, J. C. (2006). *The difference maker: Making your attitude your greatest asset.* Nashville, TN: Thomas Nelson.

Nair, C. S., & Adams, P. (2009). Forum survey platform: A Factor influencing online survey delivery and response rate. *Quality in Higher Education, 15*(3), 291-296.

Newman, F. (1986). Priorities for the future: Toward a common agenda. *Social Education*, 50(4), 240-250.

Nicolaidis, C. S., & Michalopoulos, G. (2004, April). Education, industry and the knowing-doing gap: A knowledge management perspective of business education. *Industry & Higher Education, 18*(2), 101-110.

Pfeffer, J., & Sutton, R. I. (1999). Knowing "what" to do is not enough: Turning knowledge into action. *California Management Review, 42*(1), 83-108.

Pfeffer, J., & Sutton, R. I. (2000). *The knowing-doing gap: How smart companies turn knowledge into action.* Boston: Allyn and Bacon.

Pink, D. H. (2009). *Drive: The surprising truth about what motivates us.* New York: Riverhead Books.

Pollock, J. E. (2007). *Improving student learning one teacher at a time.* Alexandria, VA: Association for Supervision and Curriculum Development.

Popham, W. J. (2003). *Test better teach better: The instructional role of assessment.* Alexandria, VA: Association for Supervision and Curriculum Development.

Reeves, D. B. (2009). *Leading change in your school: How to conquer myths, build commitment, and get results*. Alexandria, VA: Association for Supervision and Curriculum Development.

Saphier, J., & Gower, R. (1997). *The skillful teacher: Building your teaching skills* (5th ed.). Acton, MA: Research For Better Teaching.

Scherer, M. (2001, September). How and why standards can improve student achievement a conversation with Robert J. Marzano. *Educational Leadership, 59*(1), 14-18.

Schmoker, M. (2006*). Results now: How we can achieve unprecedented improvements in teaching and learning.* Alexandra, VA: Association for Supervision and Curriculum Development.

Secretan, L. (2004). *Inspire! What great leaders do.* Hoboken, NJ: Wiley.

Segall, A. (2004, November). Blurring the lines between content and pedagogy. *Social Education, 68*(7), 479-482.

Shih, T., & Fan, X. (2009). Comparing response rates in e-mail and paper surveys: A meta-analysis. *Educational Research Review, 4*(1), 26-40.

Shulman, L. S. (1987, September). Assessment for teaching: An initiative for the profession. *The Phi Delta Kappan, 69*(1), 38-44. Retrieved on November 15, 2010, from JSTOR.

Shulman, L. S. (1998, May). Theory, practice, and the education of professionals. *The Elementary School Journal, 98*(5), 511-526. Retrieved on November 15, 2010, from JSTOR.

Shulman, L. S., & Shulman, J. H. (2004). How and what teachers learn: A shifting perspective. *Journal of Curriculum Studies, 36*(2), 257-271.

Sousa, D. A. (2006). *How the brain learns* (3rd ed.). Thousand Oaks, CA: Corwin.

Starnes, B. A., Saderholm, J., & Webb, A. (2010, October). A community of teachers: An era of reform is changing classrooms and creating a disconnect between what teacher education programs teach and what new teachers experience. *Kappan, 92*(2), 14-18.

Stevenson, H., & Stigler, J. (1992). *The learning gap: Why our schools are failing and what we can learn from Japanese & Chinese education.* New York: Simon and Schuster.

Stiggins, R. J. (2001). *Student-involved classroom assessment* (3rd ed.). Upper Saddle River, NJ: Prentice-Hall.

Stigler, J., & Hiebert, J. (1999). *The teaching gap.* New York: Simon and Schuster.

Stronge, J. H. (2002). *Qualities of effective teachers.* Alexandria, VA: Association for Supervision and Curriculum Development.

Stronge, J. H., & Hindman, J. L. (2003, May). Hiring the best teachers. *Educational Leadership, 60*(8), 48-52.

Trouteaud, A. R. (2004). How you ask counts: A Test of internet-related components of response rates to a web-based survey. *Social Science Computer Review, 22*(3), 385-393.

U.S. Department of Education. (2002). *No Child Left Behind Act of 2001*. Washington, DC: Office of Elementary and Secondary Education. Retrieved on August 18, 2010, from http://www.ed.gov/policy/elsec/legs/esea02/107-110.pdf

Weiss, I., & Pasley, J. (2004). What is high-quality instruction? *Educational Leadership, 61*(5), 24-28.

Whitaker, T. (2004). *What great teachers do differently: 14 things that matter most.* Larchmont, NY: Eye On Education.

Wiggins, G., & McTighe, J. (2006). *Understanding by design* (2nd ed.). Upper Saddle River, NJ: Pearson Education.

Wood, D. R. (2007). Professional learning communities: Teachers, knowledge, and knowing. *Theory Into Practice, 46*(4), 281-290.

Yelland, N., Cope, B., & Kalantzis, M. (2008, August). Learning by design: Creating pedagogical frameworks for knowledge building in the 21st century. *Asia-Pacific Journal of Teacher Education, 36*(3), 197-213.

Appendix A

Institutional Review Board Approval Letter

University of Nebraska Lincoln

October 12, 2011

Gary Nunnally
Department of Educational Administration
8833 Edwin Ln Lincoln, NE 68517

Larry Dlugosh
Department of Educational Administration
141C TEAC, UNL, 68588-0360

IRB Number: 20111012105 EX
Project ID: 12105
Project Title: The Teacher Knowing-Doing Gap

Dear Gary:

This letter is to officially notify you of the approval of your project by the Institutional Review Board (IRB) for the Protection of Human Subjects. It is the BoardÂ's opinion that you have provided adequate safeguards for the rights and welfare of the participants in this study based on the information provided. Your proposal is in compliance with this institutionÂ's Federal Wide Assurance 00002258 and the DHHS Regulations for the Protection of Human Subjects (45 CFR 46) and has been classified as Exempt Category 2.

You are authorized to implement this study as of the Date of Final Approval: 10/12/2011.

1. The approved interview informed consent form has been uploaded to NUgrant (file with -Approved.pdf in the file name). Please use this form to distribute to participants. If you need to make changes to the informed consent form, please submit the revised form to the IRB for review and approval prior to using it.

2. Please include the IRB approval number (IRB# 20111012105 EX) in the on-line consent document. Please email a copy of these document to irb@unl.edu for our records. If you need to make changes to the document please submit the revised document to the IRB for review and approval prior to using it.

We wish to remind you that the principal investigator is responsible for reporting to this Board any of the following events within 48 hours of the event:
* Any serious event (including on-site and off-site adverse events, injuries, side effects, deaths, or other problems) which in the opinion of the local investigator was unanticipated, involved risk to subjects or others, and was possibly related to the research procedures;
* Any serious accidental or unintentional change to the IRB-approved protocol that involves risk or has the potential to recur;
* Any publication in the literature, safety monitoring report, interim result or other finding that indicates an unexpected change to the risk/benefit ratio of the research;

* Any breach in confidentiality or compromise in data privacy related to the subject or others; or
* Any complaint of a subject that indicates an unanticipated risk or that cannot be resolved by the research staff.

This project should be conducted in full accordance with all applicable sections of the IRB Guidelines and you should notify the IRB immediately of any proposed changes that may affect the exempt status of your research project. You should report any unanticipated problems involving risks to the participants or others to the Board.

If you have any questions, please contact the IRB office at 472-6965.

Sincerely,

Becky R. Freeman, CIP
for the IRB

Appendix B

On-Line Survey informed Consent Form

University of Nebraska Lincoln

COLLEGE OF EDUCATION AND HUMAN SCIENCES
Department of Educational Administration

ON-LINE SURVEY INFORMED CONSENT FORM

IRB# 20111012105 EX
Title of Project:

The Knowing-Doing Gap: Bridging the gap between what teachers know about pedagogical knowledge and what pedagogical knowledge they use in their classrooms.

Purpose of the Research:

The purpose of this project is to identify what teachers "know" about pedagogy and what teachers actually do in the classroom. Pedagogy is defined as the science of teaching. Thus, the study aims to identify what pedagogical knowledge teachers have learned and what pedagogical knowledge they actually use in their lesson planning and instruction with students in their classroom.

According to Robert J. Marzano in *Classroom Instruction that Works*, teachers who consistently and systematically utilize research-based best practices more effectively improve student learning. Given the nature of the changing environment in which we live, it is important for our education system to continue to improve. Discovery of what teachers know about pedagogy and helping them to effectively implement pedagogical strategies in their classrooms is important for improving student learning and preparing the next generation for a global economy.

This study, part of the doctoral requirement of the University of Nebraska-Lincoln, will help clarify areas that professional organizations, institutions of higher learning, Educational Service Units and central office personnel can focus their effort to develop the next generation of teachers.

Procedures:

A purposeful sample of High School teachers will be drawn from selected Class A, B, C and D high schools. The teachers will be invited to participate in a brief, 10 to 15 minute on-line survey. A follow up phone interview will be conducted with ten teachers.

Risks:

There are no known risks or discomforts associated with this research.

Benefits:

Participants in this study do not receive direct individual benefit. However, participants do indirectly accrue professional benefits in that participation in this research study may help teachers, professional organizations, institutions of higher learning, ESUs and central office personnel develop strategies to improve the pedagogy of teachers and ultimately improve student learning.

141 Teachers College Hall / P.O. Box 880360 / Lincoln, NE 68588-0360 / (402) 472-3726 / FAX (402) 472-4300

Confidentiality:

Your participation in the study and responses to the questions are confidential. Data used in reports will be presented in a manner that prevents identification of individuals and schools and protects your individual identity.

Opportunity to Ask Questions:

You are encouraged to ask questions concerning this research before or after agreeing to participate in this research study. Please contact me at (402) 786 -2765 or gnunnall@esu6.org or my advisor, Larry Dlugosh, at (402) 472-0975 or ldugosh1@unl.edu with any questions you have regarding my study. Questions concerning your rights as a research participant or your concerns about the study should be addressed to the University of Nebraska-Lincoln Institutional Review Board at (402) 472-6965

Freedom to Withdraw:

Your participation in this study is voluntary. You are free to decide not to participate in this study or to withdraw from this study at any time without adversely impacting your relationship with your district, the researchers, or the University of Nebraska-Lincoln. Your decision will not result in any loss of benefits to which you are otherwise entitled.

Consent, Right to Receive a Copy:

You are voluntarily making a decision whether or not to participate in this research study. Your acceptance certifies that you have decided to participate having read and understood the information presented. Please print a copy of this informed consent for your records.

Please accept my sincere thanks for your help with this important project.

◯ I agree to participate. ◯ I decline to participate.

Participant's Signature_____ Date_____

Gary Nunnally
8833 Edwin Lane
Lincoln, NE 68517
(402) 467 – 5112
gnunnall@esu6.org

Larry Dlugosh
141 Teachers College Hall
University of Nebraska-Lincoln
Lincoln, NE 68588-0360
402-472-0975
ldlugosh1@unl.edu

Appendix C

Survey Instrument: The Teacher Knowing-Doing Gap

Teacher Knowing-Doing Gap - IRB# 20111012105 EX

The Knowing-Doing Gap: Bridging the gap between what teachers know about pedagogical knowledge and what pedagogical knowledge they use in their classrooms.

Purpose of the Research:
The purpose of this project is to identify what teachers "know" about pedagogy and what teachers actually do in the classroom. Pedagogy is defined as the science of teaching. Thus, the study aims to identify what pedagogical knowledge teachers have learned and what pedagogical knowledge they actually use in their lesson planning and instruction with students in their classroom.
According to Robert J. Marzano in Classroom Instruction that Works, teachers who consistently and systematically utilize research-based best practices more effectively improve student learning. Given the nature of the changing environment in which we live, it is important for our education system to continue to improve. Discovery of what teachers know about pedagogy and helping them to effectively implement pedagogical strategies in their classrooms is important for improving student learning and preparing the next generation for a global economy.
This study, part of the doctoral requirement of the University of Nebraska-Lincoln, will help clarify areas that professional organizations, institutions of higher learning, Educational Service Units and central office personnel can focus their effort to develop the next generation of teachers.

Procedures:
A purposeful sample of High School teachers will be drawn from selected Class A, B, C and D high schools. The teachers will be invited to participate in a brief, 10 to 15 minute on-line survey. A follow up phone interview will be conducted with ten teachers.

Risks:
There are no known risks or discomforts associated with this research.

Benefits:
Participants in this study do not receive direct individual benefit. However, participants do indirectly accrue professional benefits in that participation in this research study may help teachers, professional organizations, institutions of higher learning, ESUs and central office personnel develop strategies to improve the pedagogy of teachers and ultimately improve student learning.

Confidentiality:
Your participation in the study and responses to the questions are confidential. Data used in reports will be presented in a manner that prevents identification of individuals and schools and protects your individual identity.

Opportunity to Ask Questions:
You are encouraged to ask questions concerning this research before or after agreeing to participate in this research study. Please contact me at (402) 786 -2765 or gnunnall@esu6.org or my advisor, Larry Dlugosh, at (402) 472-0975 or ldugosh1@unl.edu with any questions you have regarding my study. Questions concerning your rights as a research participant or your concerns about the study should be addressed to the University of Nebraska-Lincoln Institutional Review Board at (402) 472-6965

Freedom to Withdraw:
Your participation in this study is voluntary. You are free to decide not to participate in this study or to withdraw from this study at any time without adversely impacting your relationship with your district, the researchers, or the University of Nebraska-Lincoln. Your decision will not result in any loss of benefits to which you are otherwise entitled.

Consent, Right to Receive a Copy:
You are voluntarily making a decision whether or not to participate in this research study. Your acceptance certifies that you have decided to participate having read and understood the information presented. Please print a copy of this informed consent for your records.

Please accept my sincere thanks for your help with this important project.

Gary Nunnally
8833 Edwin Lane

Lincoln, NE 68517
(402) 467 – 5112
gnunnall@esu6.org

Larry Dlugosh
141 Teachers College Hall
University of Nebraska-Lincoln
Lincoln, NE 68588-0360
402-472-0975
ldlugosh1@unl.edu

***1. Do you agree to participate in the following survey?**

◯ Yes

◯ No

2. 1. Please identify whether you are male or female.

- ◯ Male
- ◯ Female

3. Total years in education (including this year).

- ◯ 0-5 yrs.
- ◯ 6-10 yrs.
- ◯ 11-15 yrs.
- ◯ 16-20 yrs.
- ◯ 21+ yrs.

4. Total 9th-12th grade students in your building.

- ◯ Less than 100
- ◯ 100-199
- ◯ 200-299
- ◯ 300-399
- ◯ 400+

5. My primary teaching assignment is in:

- ◯ Math
- ◯ Science
- ◯ English
- ◯ Social Studies

6. What NSAA classification is your school system?

- ◯ A
- ◯ B
- ◯ C1
- ◯ C2
- ◯ D1
- ◯ D2

7. What is the highest level of education you have attained?

- ◯ Bachelor's Degree
- ◯ Bachelor's Degree + 18
- ◯ Master's Degree
- ◯ Master's Degree + 18

8. Total years since your last graduate-level course

- ◯ 0-5 yrs.
- ◯ 6-10 yrs.
- ◯ 11-15 yrs.
- ◯ 16-20 yrs.
- ◯ 21+ yrs.

9. Describe your school.

- ◯ Private
- ◯ Public

10. Does your school use professional learning teams as a part of professional development?

- ◯ Yes
- ◯ No

11. Please identify the four most successful instructional strategies you use with your students.

- [ ] Learning objectives or learning targets
- [ ] Accessing Prior Knowledge or Anticipatory Set
- [ ] Delivery of new declarative information
- [ ] Delivery of new procedural information
- [ ] Application of new information
- [ ] Summarizing or Generalization
- [ ] Note-Taking
- [ ] Comparing similarities and differences
- [ ] Providing reinforcement or recognizing effort
- [ ] Cooperative Learning or Small Group Work

12. How many instructional strategies do you regularly use with your students?

- ◯ 0-2
- ◯ 3-4
- ◯ 5-6
- ◯ More than 6

13. Please rate your knowledge of the following instructional strategies.

	Do not know	Not knowledgeable	Very little knowledge	Neutral	Knowledgeable	Very knowledgeable
Learning objectives or learning targets	◯	◯	◯	◯	◯	◯
Accessing prior knowledge or Anticipatory Set	◯	◯	◯	◯	◯	◯
Delivery of new declarative knowledge	◯	◯	◯	◯	◯	◯
Delivery of new procedural information	◯	◯	◯	◯	◯	◯
Application of new information	◯	◯	◯	◯	◯	◯
Summarizing or Generalization	◯	◯	◯	◯	◯	◯
Note-Taking	◯	◯	◯	◯	◯	◯
Comparing similarities and differences	◯	◯	◯	◯	◯	◯
Providing reinforcement or recognizing effort	◯	◯	◯	◯	◯	◯
Cooperative learning or small group work	◯	◯	◯	◯	◯	◯

14. Where did you acquire your knowledge about instructional strategies?

	Do not know	None of my strategies	A few of my strategies	Some of my strategies	Most of my strategies	All of my strategies
From your experiences as an undergraduate student	○	○	○	○	○	○
From your cooperating teacher or student teaching experience	○	○	○	○	○	○
From your graduate classes	○	○	○	○	○	○
From staff development in your school or district	○	○	○	○	○	○
From a special conference or speaker	○	○	○	○	○	○

15. How often do you utilize the following instructional strategies in your daily instruction?

	Do no know	Never	Rarely	Depends on the day or lesson	Frequently	Always
Learning objectives or learning targets	○	○	○	○	○	○
Accessing Prior Knowledge or Anticipatory Set	○	○	○	○	○	○
Delivery of new declarative information	○	○	○	○	○	○
Delivery of new procedural information	○	○	○	○	○	○
Application of new information	○	○	○	○	○	○
Summarizing or Generalization	○	○	○	○	○	○
Note-Taking	○	○	○	○	○	○
Comparing similarities and differences	○	○	○	○	○	○
Providing reinforcement or recognizing effort	○	○	○	○	○	○
Cooperative Learning or Small Group Work	○	○	○	○	○	○

16. Which of the following instructional strategies are you interested in acquiring more knowledge about?

	Do not know	Do not want to acquire any more at all	Only minimally interested in acquiring more knowledge	I may or may not be interested in acquiring more knowledge	Interested in acquiring more knowledge	Very interested in acquiring more knowledge
Learning objectives or learning targets	○	○	○	○	○	○
Accessing prior knowledge or Anticipatory Set	○	○	○	○	○	○
Delivery of new declarative information	○	○	○	○	○	○
Delivery of new procedural information	○	○	○	○	○	○
Application of new information	○	○	○	○	○	○
Summarizing or Generalization	○	○	○	○	○	○
Note-Taking	○	○	○	○	○	○
Comparing similarities and differences	○	○	○	○	○	○
Providing reinforcement or recognizing effort	○	○	○	○	○	○
Cooperative Learning or Small Group Work	○	○	○	○	○	○

17. To what degree do you utilize the following to determine how effective your instructional strategies are?

	I do not know	I never utilize	I rarely utilize	I sometimes utilize	I almost always utilize	I always utilize
Feedback from formal evaluations	○	○	○	○	○	○
Feedback from administrative walk-throughs	○	○	○	○	○	○
Feedback from colleagues - informally	○	○	○	○	○	○
Feedback from PLC's - Professional Learning Communities	○	○	○	○	○	○
Feedback from self-evaluation	○	○	○	○	○	○
From formal student feed-back	○	○	○	○	○	○
Feedback from formal, local assessments	○	○	○	○	○	○
Feedback from formal, statewide assessments	○	○	○	○	○	○

18. Please identify instructional strategies not mentioned above that you use on a consistent and systematic basis.

19. Please identify any instructional strategies not mentioned above that you use occasionally.

20. If you are willing to be contacted for a follow-up interview, would you please give me your name, phone number and e-mail.

21. Please identify any instructional strategies not mentioned in the survey that you would like to know more about.

22. Please identify ways that were not mentioned in the survey, that you have learned various instructional strategies.

23. Please identify if there was somewhere you learned specific instructional strategies that was not mentioned in the survey.

Appendix D

Survey Instrument Results

The Teacher Knowing-Doing Gap

SurveyMonkey

1. Do you agree to participate in the following survey?

	Response Percent	Response Count
Yes	97.1%	33
No	2.9%	1
answered question		34
skipped question		0

2. 1. Please identify whether you are male or female.

	Response Percent	Response Count
Male	61.3%	19
Female	38.7%	12
answered question		31
skipped question		3

3. Total years in education (including this year).

	Response Percent	Response Count
0-5 yrs.	0.0%	0
6-10 yrs.	19.4%	6
11-15 yrs.	19.4%	6
16-20 yrs.	12.9%	4
21+ yrs.	**48.4%**	**15**
	answered question	**31**
	skipped question	**3**

4. Total 9th-12th grade students in your building.

	Response Percent	Response Count
Less than 100	**29.0%**	**9**
100-199	16.1%	5
200-299	16.1%	5
300-399	16.1%	5
400+	22.6%	7
	answered question	**31**
	skipped question	**3**

5. My primary teaching assignment is in:

	Response Percent	Response Count
Math	20.0%	6
Science	16.7%	5
English	26.7%	8
Social Studies	**36.7%**	**11**
	answered question	**30**
	skipped question	**4**

6. What NSAA classification is your school system?

	Response Percent	Response Count
A	22.6%	7
B	16.1%	5
C1	**25.8%**	**8**
C2	6.5%	2
D1	12.9%	4
D2	16.1%	5
	answered question	**31**
	skipped question	**3**

7. What is the highest level of education you have attained?

	Response Percent	Response Count
Bachelor's Degree	3.2%	1
Bachelor's Degree + 18	19.4%	6
Master's Degree	29.0%	9
Master's Degree + 18	**48.4%**	**15**
	answered question	**31**
	skipped question	**3**

8. Total years since your last graduate-level course

	Response Percent	Response Count
0-5 yrs.	**80.6%**	**25**
6-10 yrs.	9.7%	3
11-15 yrs.	3.2%	1
16-20 yrs.	3.2%	1
21+ yrs.	3.2%	1
	answered question	**31**
	skipped question	**3**

9. Describe your school.

	Response Percent	Response Count
Private	6.5%	2
Public	**93.5%**	**29**
	answered question	**31**
	skipped question	**3**

10. Does your school use professional learning teams as a part of professional development?

	Response Percent	Response Count
Yes	**63.3%**	**19**
No	36.7%	11
	answered question	**30**
	skipped question	**4**

11. Please identify the four most successful instructional strategies you use with your students.

	Response Percent	Response Count
Learning objectives or learning targets	55.2%	16
Accessing Prior Knowledge or Anticipatory Set	55.2%	16
Delivery of new declarative information	27.6%	8
Delivery of new procedural information	20.7%	6
Application of new information	**58.6%**	**17**
Summarizing or Generalization	41.4%	12
Note-Taking	48.3%	14
Comparing similarities and differences	27.6%	8
Providing reinforcement or recognizing effort	41.4%	12
Cooperative Learning or Small Group Work	48.3%	14
	answered question	**29**
	skipped question	**5**

12. How many instructional strategies do you regularly use with your students?

	Response Percent	Response Count
0-2	3.4%	1
3-4	**65.5%**	**19**
5-6	17.2%	5
More than 6	13.8%	4
	answered question	**29**
	skipped question	**5**

13. Please rate your knowledge of the following instructional strategies.

	Do not know	Not knowledgeable	Very little knowledge	Neutral	Knowledgeable	Very knowledgeabl
Learning objectives or learning targets	0.0% (0)	3.4% (1)	0.0% (0)	6.9% (2)	**62.1% (18)**	27.6% (8)
Accessing prior knowledge or Anticipatory Set	0.0% (0)	0.0% (0)	3.6% (1)	3.6% (1)	**53.6% (15)**	39.3% (11)
Delivery of new declarative knowledge	10.3% (3)	3.4% (1)	3.4% (1)	20.7% (6)	**51.7% (15)**	10.3% (3)
Delivery of new procedural information	10.3% (3)	3.4% (1)	3.4% (1)	13.8% (4)	**48.3% (14)**	20.7% (6)
Application of new information	0.0% (0)	0.0% (0)	0.0% (0)	6.9% (2)	**72.4% (21)**	20.7% (6)
Summarizing or Generalization	0.0% (0)	0.0% (0)	0.0% (0)	6.9% (2)	44.8% (13)	**48.3% (14)**
Note-Taking	0.0% (0)	0.0% (0)	0.0% (0)	3.4% (1)	**62.1% (18)**	34.5% (10)
Comparing similarities and differences	0.0% (0)	0.0% (0)	0.0% (0)	3.4% (1)	**55.2% (16)**	41.4% (12)
Providing reinforcement or recognizing effort	0.0% (0)	0.0% (0)	0.0% (0)	6.9% (2)	**48.3% (14)**	44.8% (13)
Cooperative learning or small group work	0.0% (0)	0.0% (0)	3.4% (1)	6.9% (2)	**44.8% (13)**	**44.8% (13)**
						answere
						skippe

14. Where did you acquire your knowledge about instructional strategies?

	Do not know	None of my strategies	A few of my strategies	Some of my strategies	Most of my strategies	All of my strategies	Rating Average	R
From your experiences as an undergraduate student	0.0% (0)	10.3% (3)	**51.7% (15)**	31.0% (9)	6.9% (2)	0.0% (0)	2.34	
From your cooperating teacher or student teaching experience	0.0% (0)	13.8% (4)	**44.8% (13)**	34.5% (10)	6.9% (2)	0.0% (0)	2.34	
From your graduate classes	0.0% (0)	3.4% (1)	20.7% (6)	34.5% (10)	**41.4% (12)**	0.0% (0)	3.14	
From staff development in your school or district	0.0% (0)	0.0% (0)	27.6% (8)	**44.8% (13)**	24.1% (7)	3.4% (1)	3.03	
From a special conference or speaker	0.0% (0)	3.4% (1)	27.6% (8)	**48.3% (14)**	20.7% (6)	0.0% (0)	2.86	
						answered question		
						skipped question		

15. How often do you utilize the following instructional strategies in your daily instruction?

	Do no know	Never	Rarely	Depends on the day or lesson	Frequently	Always	Rating Average	Response Count
Learning objectives or learning targets	0.0% (0)	0.0% (0)	3.4% (1)	27.6% (8)	**58.6% (17)**	10.3% (3)	3.76	29
Accessing Prior Knowledge or Anticipatory Set	0.0% (0)	0.0% (0)	3.4% (1)	34.5% (10)	**48.3% (14)**	13.8% (4)	3.72	29
Delivery of new declarative information	6.9% (2)	3.4% (1)	0.0% (0)	37.9% (11)	**51.7% (15)**	0.0% (0)	3.24	29
Delivery of new procedural information	13.8% (4)	3.4% (1)	3.4% (1)	**58.6% (17)**	20.7% (6)	0.0% (0)	2.69	29
Application of new information	0.0% (0)	3.4% (1)	3.4% (1)	24.1% (7)	**62.1% (18)**	6.9% (2)	3.66	29
Summarizing or Generalization	0.0% (0)	0.0% (0)	0.0% (0)	41.4% (12)	**48.3% (14)**	10.3% (3)	3.69	29
Note-Taking	0.0% (0)	3.4% (1)	3.4% (1)	34.5% (10)	**41.4% (12)**	17.2% (5)	3.66	29
Comparing similarities and differences	0.0% (0)	0.0% (0)	0.0% (0)	**48.3% (14)**	41.4% (12)	10.3% (3)	3.62	29
Providing reinforcement or recognizing effort	0.0% (0)	0.0% (0)	6.9% (2)	10.3% (3)	**48.3% (14)**	34.5% (10)	4.10	29
Cooperative Learning or Small Group Work	0.0% (0)	0.0% (0)	10.3% (3)	**44.8% (13)**	41.4% (12)	3.4% (1)	3.38	29
						answered question		**29**
						skipped question		**5**

16. Which of the following instructional strategies are you interested in acquiring more knowle about?

	Do not know	Do not want to acquire any more at all	Only minimally interested in acquiring more knowledge	I may or may not be interested in acquiring more knowledge	Interested in acquiring more knowledge	Very interested in acquiring more knowledge	Rating Average
Learning objectives or learning targets	3.7% (1)	11.1% (3)	3.7% (1)	29.6% (8)	**44.4% (12)**	7.4% (2)	3.22
Accessing prior knowledge or Anticipatory Set	3.7% (1)	11.1% (3)	11.1% (3)	22.2% (6)	**44.4% (12)**	7.4% (2)	3.15
Delivery of new declarative information	3.7% (1)	7.4% (2)	3.7% (1)	33.3% (9)	**44.4% (12)**	7.4% (2)	3.30
Delivery of new procedural information	3.6% (1)	3.6% (1)	10.7% (3)	28.6% (8)	**46.4% (13)**	7.1% (2)	3.32
Application of new information	3.6% (1)	3.6% (1)	10.7% (3)	28.6% (8)	**46.4% (13)**	7.1% (2)	3.32
Summarizing or Generalization	3.7% (1)	7.4% (2)	14.8% (4)	25.9% (7)	**44.4% (12)**	3.7% (1)	3.11
Note-Taking	7.4% (2)	11.1% (3)	22.2% (6)	11.1% (3)	**44.4% (12)**	3.7% (1)	2.85
Comparing similarities and differences	3.8% (1)	7.7% (2)	11.5% (3)	23.1% (6)	**46.2% (12)**	7.7% (2)	3.23
Providing reinforcement or recognizing effort	3.7% (1)	7.4% (2)	3.7% (1)	22.2% (6)	**55.6% (15)**	7.4% (2)	3.41
Cooperative Learning or Small Group Work	3.7% (1)	7.4% (2)	11.1% (3)	14.8% (4)	**40.7% (11)**	22.2% (6)	3.48
						answered question	
						skipped question	

17. To what degree do you utilize the following to determine how effective your instructional strategies are?

	I do not know	I never utilize	I rarely utilize	I sometimes utilize	I almost always utilize	I always utilize	Rating Average	Response Count
Feedback from formal evaluations	0.0% (0)	0.0% (0)	7.1% (2)	**46.4% (13)**	32.1% (9)	14.3% (4)	3.54	28
Feedback from administrative walk-throughs	0.0% (0)	3.6% (1)	10.7% (3)	**42.9% (12)**	28.6% (8)	14.3% (4)	3.39	28
Feedback from colleagues - informally	0.0% (0)	3.6% (1)	17.9% (5)	**50.0% (14)**	25.0% (7)	3.6% (1)	3.07	28
Feedback from PLC's - Professional Learning Communities	17.9% (5)	**25.0% (7)**	10.7% (3)	21.4% (6)	17.9% (5)	7.1% (2)	2.18	28
Feedback from self-evaluation	3.7% (1)	3.7% (1)	0.0% (0)	14.8% (4)	**40.7% (11)**	37.0% (10)	3.96	27
From formal student feed-back	3.6% (1)	0.0% (0)	21.4% (6)	**42.9% (12)**	25.0% (7)	7.1% (2)	3.07	28
Feedback from formal, local assessments	3.6% (1)	7.1% (2)	10.7% (3)	25.0% (7)	**35.7% (10)**	17.9% (5)	3.36	28
Feedback from formal, statewide assessments	3.6% (1)	17.9% (5)	14.3% (4)	**25.0% (7)**	21.4% (6)	17.9% (5)	2.96	28
						answered question		**28**
						skipped question		**6**

18. Please identify instructional strategies not mentioned above that you use on a consistent and systematic basis.

	Response Count
	8
answered question	**8**
skipped question	**26**

19. Please identify any instructional strategies not mentioned above that you use occasionally.

	Response Count
	6
answered question	6
skipped question	28

20. If you are willing to be contacted for a follow-up interview, would you please give me your name, phone number and e-mail.

	Response Count
	5
answered question	5
skipped question	29

21. Please identify any instructional strategies not mentioned in the survey that you would like to know more about.

	Response Count
	5
answered question	5
skipped question	29

22. Please identify ways that were not mentioned in the survey, that you have learned various instructional strategies.

	Response Count
	7
answered question	7
skipped question	27

23. Please identify if there was somewhere you learned specific instructional strategies that was not mentioned in the survey.

	Response Count
	6
answered question	6
skipped question	28

Page 9, Q18. Please identify instructional strategies not mentioned above that you use on a consistent and systematic basis.		
1	class discussions quickwrites journals video--powerpoint [All Responses]	Dec 2, 2011 9:40 AM
2	Questioning Techniques, Discussion Strategies [All Responses]	Nov 22, 2011 10:04 AM
3	Questioning techniques to get maximum involvment. [All Responses]	Nov 21, 2011 5:04 PM
4	Material review games [All Responses]	Nov 21, 2011 1:52 PM
5	Time on Task Wait time extended and interaction sequence Bell ringers Closure Check for understanding [All Responses]	Nov 18, 2011 8:26 AM
6	Integration of technology. [All Responses]	Nov 16, 2011 8:03 PM
7	Self application to student. Modeling. Case studies [All Responses]	Nov 16, 2011 10:52 AM
8	Try to figure out the best strategy for each student and target their strengths. [All Responses]	Nov 15, 2011 2:45 PM

Page 9, Q19. Please identify any instructional strategies not mentioned above that you use occasionally.		
1	quickwrites/freewrites journals powerpoint	Dec 2, 2011 9:40 AM
2	NA	Nov 22, 2011 10:04 AM
3	Bonus to maximize standardized test scores.	Nov 21, 2011 5:04 PM
4	student-led technology projects (wikis, prezis, etc.)	Nov 21, 2011 1:52 PM
5	on-the-clock	Nov 18, 2011 8:26 AM
6	Drill work with students	Nov 16, 2011 10:52 AM

Page 9, Q20. If you are willing to be contacted for a follow-up interview, would you please give me your name, phone number and e-mail.		
1	jfritzi@esu7.org	Dec 2, 2011 9:40 AM
2	NA	Nov 22, 2011 10:04 AM
3	Joyce A. Raatz 402 729 2524 jraatz@fairburyjeffs.org	Nov 22, 2011 8:57 AM
4	James Mohrmann 402-944-2114 Work 402-488-7843 Home james.mohrmann@agps.org	Nov 21, 2011 5:04 PM
5	n/a	Nov 21, 2011 1:52 PM

Page 9, Q21. Please identify any instructional strategies not mentioned in the survey that you would like to know more about.		
1	more information for effective visual presentations	Dec 2, 2011 9:40 AM
2	NA	Nov 22, 2011 10:04 AM
3	debate	Nov 22, 2011 8:57 AM
4	Learning more about converstion to maximize student decision making. (i.e. Jim Faye Seminars if still happening out of Colorado.)	Nov 21, 2011 5:04 PM
5	n/a	Nov 21, 2011 1:52 PM

Page 9, Q22. Please identify ways that were not mentioned in the survey, that you have learned various instructional strategies.		
1	contract learning/learning levels	Dec 2, 2011 9:40 AM
2	NA	Nov 22, 2011 10:04 AM
3	I teach in pairs	Nov 22, 2011 8:57 AM
4	Experience. Focusing on ways to help student to understand their mathematics not just memorize procedures. Hold them accountable by requiring work and grading work not just answers on tests.	Nov 21, 2011 5:04 PM
5	n/a	Nov 21, 2011 1:52 PM
6	Internet sources Teachers/friends from other districts and schools	Nov 17, 2011 12:23 PM
7	Professional Development group throughout the state of Nebraska that was brought about by grant money (NMPDS).	Nov 16, 2011 8:03 PM

Page 9, Q23. Please identify if there was somewhere you learned specific instructional strategies that was not mentioned in the survey.		
1	workshops (Jim Fay)	Dec 2, 2011 9:40 AM
2	NA	Nov 22, 2011 10:04 AM
3	Analyzing text book method and resdoing to make in more clear and understandable. An example lately was the inverse trigonometric sine function and its derivative.	Nov 21, 2011 5:04 PM
4	n/a	Nov 21, 2011 1:52 PM
5	NMPDS professional development series.	Nov 16, 2011 8:03 PM
6	READING	Nov 16, 2011 1:42 PM

Appendix E

Email Invitation to Principals

Tuesday, November 15, 2011
Invitation E mail to High School Principals:

Dear Nebraska Principal:

What do teachers know about effective instructional strategies and what strategies do they actually use in the classroom? I am asking for your help in having your Science, Math, English and Social Studies teachers complete a survey in order to find out more about this important subject.

As a doctoral student at the University of Nebraska-Lincoln, I am investigating what classroom teachers "know" about effective pedagogy and what they actually "do" in the classroom. As a building level principal, your support is vital in getting the survey information to your teachers. Please take a few minutes to pass this information along to ALL of your High School Science, Math, English and Social Studies teachers. I am sending a follow-up e-mail that you can directly forward to your teachers.

As a small token of appreciation for your help, I will make copies of the results available to you and your teachers upon request.

The survey website will provide your teachers with an informed consent that explains my research, their rights as a research participant, and the survey. Please instruct your teachers to read the informed consent thoroughly before deciding to take the survey. If you have questions concerning this research, please feel free to contact me at gary.nunnally@dist145schools.org or (402) 786-2765 or my advisor, Dr. Larry Dlugosh, at ldugosh1@unl.edu or (402) 472-0975.

Please note that this survey will close on Tuesday, November 22nd at noon. I will follow up this e-mail with an e-mail you can forward directly to your Math, Science, English and Social Studies teachers. Also, please accept my sincere thanks for your help with this important project.

Gary Nunnally
Waverly High School District #145
PO Box 426
13401 Amberly Road
Waverly, NE 68462
402-786-2765
gary.nunnally@dist145schools.org

Dr. Larry Dlugosh,
Educational Administration
141 Teachers College Hall
University of Nebraska-Lincoln
Lincoln, NE 68588-0360
402-472-0975
ldugosh1@unl.edu

Appendix F

Email Invitation to Teachers

Tuesday, November 15, 2011
Invitation E mail to High School Teachers:

Dear Nebraska Teacher:

What do teachers know about effective instructional strategies and what strategies do they actually use in the classroom? I am asking for your help in having Science, Math, English and Social Studies high school teachers complete a survey in order to find out more about this important subject.

As a doctoral student at the University of Nebraska-Lincoln, I am investigating what classroom teachers "know" about effective pedagogy and what they actually "do" in the classroom. As a high school classroom teacher, your support is vital in completing this research.

As a small token of appreciation for your help, I will make copies of the results available to you upon request.

The survey website will provide you with an informed consent that explains my research, your rights as a research participant, and the survey. Please read the informed consent thoroughly before deciding to take the survey. If you have questions concerning this research, please feel free to contact me at gary.nunnally@dist145schools.org or (402) 786-2765 or my advisor, Dr. Larry Dlugosh, at ldugosh1@unl.edu or (402) 472-0975.

Here is the direct link to the survey:
https://www.surveymonkey.com/s/757ZVWS

Please note that this survey will close on Tuesday, November 29th at noon. Also, please accept my sincere thanks for your help with this important project.

Gary Nunnally
Waverly High School District #145
PO Box 426
13401 Amberly Road
Waverly, NE 68462
402-786-2765
gary.nunnally@dist145schools.org

Dr. Larry Dlugosh,
Educational Administration
141 Teachers College Hall
University of Nebraska-Lincoln
Lincoln, NE 68588-0360
402-472-0975
ldugosh1@unl.edu

Appendix G

Email Reminder to Principals

Follow-up reminder email

Dear Nebraska Principal:

The responses of your teachers are important. If you have not already done so, please encourage your core (Mathematics, Science, English and Social Studies) teachers to click on the link below to access the survey measuring what they "know" about effective instructional strategies and what they are "doing" in the classroom. Their responses will help professional organizations, institutions of higher learning, ESUs and central office personnel better meet your needs as a principal.

The survey should take no more than 10 minutes to complete and the responses of teachers are completely anonymous. I ask that you encourage your core teachers to complete the survey in the next couple of days as the survey will close on Friday, December 2nd at noon.

Please forward this e-mail to ALL of your High School Mathematics, Science, English and Social Studies teachers and have them click on the link below to access the informed consent page and begin the survey.

Here is the direct link to the survey:
https://www.surveymonkey.com/s/757ZVWS

Thank-you for your help with this important project.

Gary Nunnally
Waverly High School District #145
PO Box 426
13401 Amberly Road
Waverly, NE 68462
402-786-2765
gary.nunnally@dist145schools.org

Dr. Larry Dlugosh,
Educational Administration
141 Teachers College Hall
University of Nebraska-Lincoln
Lincoln, NE 68588-0360
402-472-0975
ldugosh1@unl.edu

Appendix H

Informed Consent Form: Interview

University of Nebraska Lincoln

COLLEGE OF EDUCATION AND HUMAN SCIENCES
Department of Educational Administration

INFORMED CONSENT FORM - INTERVIEW

IRB# 20111012105 EX

Title of Project:

The Knowing-Doing Gap: Bridging the gap between what teachers know about pedagogical knowledge and what pedagogical knowledge they use in their classrooms.

Purpose of the Research:

The purpose of this project is to identify what teachers "know" about pedagogy and what teachers actually do in the classroom. Pedagogy is defined as the science of teaching. Thus, the study aims to identify what pedagogical knowledge teachers have learned and what pedagogical knowledge they actually use in their lesson planning and instruction with students in their classroom.

According to Robert J. Marzano in *Classroom Instruction that Works*, teachers who consistently and systematically utilize research-based best practices more effectively improve student learning. Given the nature of the changing environment in which we live, it is important for our education system to continue to improve. Discovery of what teachers know about pedagogy and helping them to effectively implement pedagogical strategies in their classrooms is important for improving student learning and preparing the next generation for a global economy.

This study, part of the doctoral requirement of the University of Nebraska-Lincoln, will help clarify areas that professional organizations, institutions of higher learning, Educational Service Units and central office personnel can focus their effort to develop the next generation of teachers.

You are invited to participate in this interview because you voluntarily indicated you would be willing to do some follow-up questions based on the survey you filled out.

Procedures:

A purposeful sample of High School teachers was drawn from selected Class A, B, C and D high schools. Participation in this interview will require 30-45 minutes of your time. You will be asked to participate in an interview with the study's principal investigator, Gary S. Nunnally, who will audiotape with your permission. You may ask that the tape be turned off at any time during the interview. The tape will be transcribed by a professional transcriptionist and will be sent you for review. At that time, you may clarify your responses or give the researcher other information. You may select a place with the researcher for the inteview.

Risks:

There are no known risks or discomforts associated with this research.

Benefits:

Participants in this study do not receive direct individual benefit. However, participants do

indirectly accrue professional benefits in that participation in this research study may help teachers, professional organizations, institutions of higher learning, ESUs and central office personnel develop strategies to improve the pedagogy of teachers and ultimately improve student learning.

Confidentiality:

Your participation in the study and responses to the questions are confidential. Data used in reports will be presented in a manner that prevents identification of individuals and schools and protects your individual identity.

Opportunity to Ask Questions:

You are encouraged to ask questions concerning this research before or after agreeing to participate in this research study. Please contact me at (402) 786 -2765 or gnunnall@esu6.org or my advisor, Larry Dlugosh, at (402) 472-0975 or ldugosh1@unl.edu with any questions you have regarding my study. Questions concerning your rights as a research participant or your concerns about the study should be addressed to the University of Nebraska-Lincoln Institutional Review Board at (402) 472-6965

Freedom to Withdraw:

Your participation in this study is voluntary. You are free to decide not to participate in this study or to withdraw from this study at any time without adversely impacting your relationship with your district, the researchers, or the University of Nebraska-Lincoln. Your decision will not result in any loss of benefits to which you are otherwise entitled.

Consent, Right to Receive a Copy:

You are voluntarily making a decision whether or not to participate in this research study. Your acceptance certifies that you have decided to participate having read and understood the information presented. Please print a copy of this informed consent for your records.

Please accept my sincere thanks for your help with this important project.

◯ I agree to participate. ◯ I decline to participate.

Participant's Signature_____ Date_____

Gary Nunnally
8833 Edwin Lane
Lincoln, NE 68517
(402) 467 – 5112
gnunnall@esu6.org

Larry Dlugosh
141 Teachers College Hall
University of Nebraska-Lincoln
Lincoln, NE 68588-0360
402-472-0975
ldlugosh1@unl.edu

Appendix I

Interview Questions

Interview Questions

6. **Research Question: What pedagogical knowledge do teachers possess?**

    - Explain what your most effective instructional strategies are.
    - Explain how often you use your most effective instructional strategies.

7. **Research Question: Where was the teachers' pedagogical knowledge acquired?**

    - Explain where you acquired your most effective instructional strategies.
    - Explain what you would consider your least effective training.
    - What made it your least effective training?

8. **Research Question: What pedagogical knowledge do teachers utilize?**

    - Explain which strategies you use consistently and systematically.

9. **Research Question: What pedagogical knowledge would teaches like to possess?**

    - In what area of instruction would you like to be more effective?
    - What would you be willing to do to acquire that pedagogical knowledge?

10. **Research Question: How do teachers test the efficacy of their pedagogy?**

    - How do you know when a strategy you used in the classroom was effective?

Appendix J

Confidentiality Agreement--Transcriptionist

CONFIDENTIALITY AGREEMENT – TRANSCRIPTIONIST

Deb Altman

(name of transcriptionist)

hereby agree that I will maintain confidentiality of all tape-recorded interviews that I have been contracted to transcribe for the following research project: The Teacher Knowing Doing Gap.

This means that I will not discuss nor share any tape-recorded or transcribed data with any individuals other than the researcher, Gary S. Nunnally, or his supervisor, Dr. Larry Dlugosh. When the transcriptions are complete, I will return all audi-tapes to the researcher and will transfer all electronic files to the researcher. Upon confirmation of receipt of these files by the researcher, I will destroy the orginals.

Date 3/21/12

(signature of transcriptionist)

Appendix K

Participant #1 Interview

PARTICIPANT #1 - JAMES
3/12/12

James can you just tell me just a little, basics about yourself? How long you've been in education, what you teach, those types a things?

I teach math. **('Kay)** And I started in 1970.

Okay.

So I taught in Wisconsin for 9 years, and then I taught, I've taught here for, this is my 29th year.

Great, 'kay.

And so, I also spent 3 years, yeah, a little over 3 years in California. I went to- I did restaurant management for a while, and then I did U-Haul management, and I also spent a year in Columbus Nebraska being a quality control supervisor. Then I went, wanted to go back to teaching, so didn't wanna worked night shifts anymore. So I went back to Wisconsin and ended up back here in Nebraska. So that's it in a nutshell, that's basically what I've done.

Interesting. So you've got a lot a life experiences then don't ya?

Yeah.

Yeah. (Laugh) And then, and your current position, what, what grade levels, what, what area in mathematics are you teaching?

I, right now I have 10 through 12 mathematics, and I teach… Algebra 2, Trigonometry, College Algebra, College Calculus, College Statistics.

Right, great. And then, what's, what's your highest level of education James?

I have a Master's degree, plus, uh… 36 hours over that or more.

Sure. And your Masters is, is in what?

It's an MAT. I don't know if you're familiar with those.

I'm not.

It's U—it came from UNL.

'Kay.

An MAT is a Master of Arts in Teaching. But it's different from… it's not, I, my Master's degree is not education, math education, it is in actually mathematics and statistics, ``but it's an MAT degree.

Got it, great.

About, uh… let me think now, '86, '88, they had a program in Nebraska here at UNL, ran it, and they had they take 60 mathematics teachers, and I was fortunate enough to be one a those mathematics teachers. And they put it through 3 summers, where we went through 5 weeks where we had to stay on campus, and they put us through, and they basically, we basically got most of our Master's degree done through that program.

Interesting.

That's where they created a, an MAT at that time. And they still have that program going on to a certain degree, so.

Mkay, good. I'm just gonna ask ya 4 or 5 basic questions here, and if that takes us someplace else, that's fine too. I just wanna start by looking at your instructional strategies. And so what you're usin' in the classroom. What do you think are your most effective strategies with students?

Okay, the first thing is, is… strategy for me is to get the students to understand what they do, not just memorize. 'Cause in math, I myself, for numerous years, memorized how to get things done. In fact, I was good at it.

Sure.

And I could fool my teachers into thinking I knew what I was doing when I really did not.

(Laughs) That's good, yeah.

I just memorized the process, and, and I was very good at it.

Right.

I took notes in class, and I went home and memorized those. Even in calculus class in college, when I first came to mechanical physics, 'cause I wanted to go into engine—engineering when I first started college at Augustana College. I wanted to go into engineering. And I found out mechanical physics, after I got into that course, that the integration sign, I don't know if you know what that is, but anyway it's a mathematical symbol. **('Kay)** I did not know what that was. I knew how to work it in calculus but I'm going what does it mean in physics?

Right.

Well that's when I first started thinking well gee, I'd better go somewhere else. So I started in education. And as I went into education for math, I became aware that most people have been taught to memorize their math. Well that's the first strategy that I have, is that I'm very, very much telling my students we've gotta understand why we do it, not just memorize how to get an answer.

Sure.

And so that's one a my strategies. The other strategy is, I've been workin' on now, oh, quite a while is my question technique in class, where I try to get… Uh, see otherwise, you, you use traditional question techniques, you'll have people throw up their hand and it's always the stars, **(Right)** and they'll answer all the questions. So what I do is I do a conversational style where I'll say okay, who knows this answer? I'll say okay put your hand up. I don't want them to say anything, I just want them to put their hand up they know the answer. **(Umhum)** And I'll use different strategies to get them to… to… use each other. Like I'll say, okay, look around you. Who's got their hand up, and ask them why is this question true, why is this question happening, or whatever the question may be. And that works to get some communication going. And then also I'll tell people if they have their hand up, I'll say well tell people around you why you think this is true. So I get—if somebody's too shy to ans—ask questions, well then somebody's gonna tell them what's going on. And most people who have their hand up will be glad to do that.

Sure. And how, now often do you think you use that, that questioning strategy?

I use that almost daily. **(Umhum)** Though it does, it does variate with the idea of how much new material I gotta get through. **(Sure)** Especially at the higher levels. Sometimes I… I, I don't like to do anymore lecture than I absolutely have to. **(Umhum)** to me lecture, okay, bet the basics down, and saying okay now, I, I basically tell the kids, okay we're done with the lecturing here, I wanna get into now um… I want you to ask me questions from the assignment. And we're gonna work on questions for the assignment, and we're gonna just take and ,and you're gonna ask me questions and I'm gonna work you through it. 'Kay. **(Yeah)** That questioning technique comes in good. But I, I, my goal is to keep the lecturing down as minimum as possible.

Sure.

Also another strategy we're using, which has worked for me in the last couple years, and I got kids in the room that are doin' this right now, that are working at the board, helping themselves, and I can come along beside the and look at what they're doing, and, and… coach.

So you have individual students that are at, doin' board work.

Actually they're workin' in groups.

'Kay.

Sometimes it's individuals, just depends on how many in the class and how many, and what, and what we're doing type a thing.

Sure.

Well, let's see, along with this, I, I have always had this idea, I wanna cover what I cover in math so you understand it, so I have always had, I have 2 days for every section that I cover. **(Umhum)** And sometimes in my calculus class I have 3 days, 'cause Southeast has been gracious enough to give us a whole year to cover a semester a calculus, and they kept us credit for it, So. **('Kay)** So what I do is I have, uh… One day is, is basically going over as much lecture as I need to do, which is hopefully not a lot, and then going into the next 2 days, within the—or, or one day, depending on which class it is, **(Sure)** going over and saying okay now I want you to go home, I want you to work on this assignment, I want you to come back with all the questions you have, we're gonna answer 'em. And the reason I do that is because when I was in high school mathematics classes, we went from one section to another section, day to day, and we didn't have any questions in the class that I remember at all.

Right.

And all it was, was, you worked the problems out, you come back, and you corrected papers, and if you don't have 'em right, you don't know why. You don't have any way to ask a question unless you come in after school.

Sure.

So that's what I try to do there. **('Kay)** The, the down side a that strategy is this; the, the kids all will put off assignments, they will procrastinate, and they won't do the assignment at the time they should. They'll say well it's not gonna be corrected until 2 days, so I just won't start.

Right, and then they don't have that time for questioning then.

Right. Well that, well then we do, but it's 'cause I say, I tell them when they come in, I says okay, I'll always hold, I says I'll always hold you accountable. Did you read the stuff, did you look at it? And they, and I don't get many hands comin' up or whatever, then I'll say, okay, we gotta move to eeny-meey-miney-moe, where'd you go, you know. **(Umhum, umhum)** So we're gonna kinda take a guess. I says now if you would do some work, we could really save ourselves sometimes here, and you wouldn't have to suffer as much. But because you didn't, we're gonna move into this with what you're gonna choose, and I'm gonna talk you through 'em, but we won't get as much done as we could have.

Right.

I try to get them to the idea that they can do some work on the outside a class, and it's gonna pay off for 'em.

Sure. So these, uh, the, the, your most effective strategies, your questioning techniques, and your group work, and, and this feedback method that you're talkin' about, where did, where did you… where did you learn to do that?

Well a lot of it was done through, um, oh let's see, through my own, through my own just experiences, and, and coming up with stuff like that. But also, the Master's degree program that I went through, we had mathematics teachers, we had 20 of us in each group, and we moved from campus to campus. And we stayed together for the 3, 3 summers. And so we would work off each other. So a lot a that stuff was, was tried out and tested. You know sometimes, and I'm talking with other mathematics teachers, and still has been. Except at our school here. We don't have the time that we need to get like mathematics teachers together, you know, **(Right)** and we're pretty much on our own. Out here as far as that goes.

Sure. Interesting. Mkay.

That's where I, I picked that up at.

Yeah.

The whole prem—premise comes around this; I want the kids to understand what they're doing, not memorizing.

Yeah, that's good. Um, and then, you think about through the years here, I'm sure you've been to a lot of training sessions. The one that you just described, where you're staying overnight and working together through a summer, and, and gettin' all that feedback was obviously (Yeah) **you know, your most effective. What, what would you say has been some of your least effective training?**

Okay. Well the least effective training to be honest with you, was and now this is at one college, so I'm gonna pick point one college, but I think it happened all over, in the, in the '60s when I—late '60s when I was in college. The education classes, were, were basically to me worthless. **(Right)** I mean they didn't teach me how to teach, they just went through all these theories. We started like Summer Hill, and we studied like Mastery Learning. We things like that. But we went, we never, it never made any sense to us. We weren't getting anything about how to teach. And then they sent us down to practice teaching they called it, student teach I guess it was, **(Sure)** and we'd go to a high school, and we only spent a quarter doin' that. And, thing of it was, is that basically we were just, if we got a good cooperating teacher, which I did have, was a big, well al—well almost the biggest thing you could do to get things done. The only course I can think of that helped me was, you know, custom measurement type things, and type stuff. **(Sure)** But, so I'm kinda critical on education courses. Although, I will say that, to

offset that, at UNL I had to take one course at the education college from Dorothy Jo Stevens. I don't know if you know the name or not.
I don't but that's okay.

But she was one of the best teachers I've ever had, and she taught educational and mathematics education there. And we had to take one of her classes. And she made us write a paper, and my paper was on Mastery Learning. **(Mm)** 'cause I've always used that, **(Umhum)** mastering the concepts. But I can't—it's kind of a modified mastery learning. **(Umhum)** Not a true mastery learning, 'cause you can't get everything to that level, you have to sometimes cut the sale and cut your losses.

Sure.

But Dorothy Jo Stevens really did me a lot as far as that one class I took from her during the summer again.

Right.

Okay, so I wanna offset that with what, what my experience with Augustana College of Education was, compared to what I had at UNL from her. So.

Sure. And, and what do you think made… made this teacher so effective?

Dorothy Jo Stevens?

Yeah.

Yeah. Well it was just her mannerisms, and the way she would, again, she would teach from understanding. **(Yeah)** You knew what she wanted. That's the first person that I ever—I, I don't like paper writing, that's why I majored in mathematics. But anyway . . .

Right. (Laughs)

She was the first person that, uh… that, that taught me how to do some paper writing, and actually make it make sense.

Sure. And, and . . .

And so… and then she was very gracious, you know, things like that. She would help ya out and stuff like that, to do research, and then how to research educational psychology and that.

Sure.

Studies, and with psychological (inaudible words). That type a thing. **(Yeah)** So that I think was good.

'Kay. And then goin' back to the least effective training, like, um… do, do you have some so—a form of staff development in your school, in your district, or in your districts in the past?

Well, in the past, in the past, uh… most staff meetings were, if you've been a old-timer, you've heard the thing "this too shall pass".

Right.

'Kay. And so, but I'll tell you what; our staff out here; so if you have a chance to talk to, uh… Mr. Jackson in the.. Finke, Finke, any person, staff members out here, we've had a change out here which I've never seen in my educational career, until just when, well I'd say it's the last 10 years. But even before Mrs. Finke, there was a… she's a –

You're cuttin' out on me, James. Are you there?

I'm still here, yeah.

Okay, there you go.

Okay. Uh… there's a principal that's over in Waverly right now, and I don't remember her name. She a, she's a principal at the Eagle School.

Okay.

Oh man, I can't think of her name. But anyway, these were people that when we do staff development, it's, it's, it's it, it's purposeful.

Right.

It's workin', okay.

Right.

So I can see, even from years before when the coaches used to walk in with their hats on, and they'd sit in the back of the room with a newspaper with the sports page open at these meetings, which I experienced in Wisconsin,; to now, where they're actively involved.

Right.

Hello?

Are you there?

There. Yeah, I am, I am.

Okay yeah, so you're just sayin' that you, feel like the administration now is much more actively involved.

Yes, much more. And they have better techniques, too.

Yeah. If, if you were gonna say you would want, you know, in one area, to learn more, to become better as a teacher, could you identify that area that you'd wanna be more effective?

Well, the one area I'm workin' on right now is my goal. It's, um… I'm workin' on more and more how to teach higher level thinking skills. And, and how much balance do you put between how much you do, and how much they do.

Right.

And so, what I'm lookin' for is, for right now, this year, I'm workin' on analysis, which is breaking down, and then synthesis, which is putting it back together.

Sure.

So we're trying to, in my classes, entertain ways. Plus I've gone into other classes, Cushman, uh, administration again. I saw a history class, which I just thought was excellent, where he was breaking down some World War II stuff. **('Kay)** And he had, he had just some techniques that I so, I thought were really good. So and I've had people come to my classes, and they look at my question techniques. So it's visiting classes and things like that. So.

Sure, good. And then, you, you've kinda answered that a little bit with, with what you just said, but how do, how do you know when a strategy you're usin' in the classroom is effective? How do you know that it's worked?

Well you gotta be measure—you gotta measure it. And a way of doing that is to, is, for the goals I have right now, I've gotta really have somebody come in and look at it. So we have what they call walkthroughs, **(Umhum)** where they'll walk in and they'll just watch for 5, 10 minutes, you know. They, and, or, or they'll come through if you ask them to look for these certain things. Then of course, along goes with that, along goes with that, the, the formal in—formal evaluations.

Sure, yeah.

And we have teachers that are coming in, and they'll get, we'll get what they call walkthrough forms, **('Kay)** they'll fill out for you, and then we have to, we have to have—that's kind of our evidence that we've done some a these things. 'Cause some a these things, that's how we measure 'em, on whether people are seeing. All the . . .

So this is other mathematics teachers, James, that are comin' through your classes?

Oh no, all, any teacher at all.

Okay.

Doesn't have to be a mathematics teacher.

Yeah, it's not like a professional learning community or somethin' like that, it's just another teacher.

Yeah. Well it's a pe—it, it's a way, but it's just, it's, we call 'em personal learning communities.

Umhum.

And then of course, it's always your students, and how they respond. That would be me observing.

Sure, sure, that's good. Okay. Anything else James, that's, that's comin' to mind that you wanna share?

But I also am very concerned when kids leave here, that they're con—that they are, that they're prepared to handle the college work.

Right.

I want them to come back and talk to me. And, and so far when they come back, most of the time it's positive. Yeah, we're there, we understand what's goin' on; we can handle the mathematics at the university or wherever, you know, type a thing.

Yeah, that's additional feedback that you're getting, (Right) **to, to see if what you're doin' is workin'.**

Right.

Sure, sure. Anything else that you can think of James, that you wanna share?

I can't think of anything right now. **('Kay)** Uh… I basically hit everything that I think is important in education.

'Kay. Well I'm gonna go ahead and turn the tape off, and this is gonna conclude our interview.

Okay.

Appendix L

Participant #2 Interview

PARTICIPANT #2 - Joyce
03/12/12

Joyce could, uh, start off, could you just tell me a little bit about yourself as far as what you teach and how long you've taught, level of education, those types a things?

Okay, I have a Masters, plus 37 hours, **(Umhum)** and I've taught for 32 years. **('Kay)** have been—28 of them have been in this district. I teach English 1 to 9th grades, composition and literature, and then I teach a language arts skills, which is for at risk and lower level students. I teach 9th grade, 10th grade, and 12th grade.

Great. Mkay. And you said you, you have a Masters plus 37, is that what you said?

Yes.

Mkay. And what, what did you get your Masters in Joyce?

Curriculum and instruction.

Great. Okay. I'm gonna just go through a series of questions now. There's a, there's about 5 main questions, and if we get off on to some other things, that's fine too. I just wanna start off talking about; have you talk about your most effective instructional strategies that you use in the classroom.

The ones I find most successful for the at risk students, I mean those are my, most of my classes, are to group them into smaller groups within the classroom, and then they, we rotate activities. **(Uh-huh)** And we, we kind of place them according to their learning needs, and it works really well.

Okay. So in a typical classroom, how many, how many groupings would you, as I hear you saying, different groupings would you have?

Three groups. **(Mkay)** And they're usually around they're usually around 17, 18, so that puts about 6 in a group.

Sure. 'Kay. Can you think of any additional strategies that you've found the most effective? So groupings is one.

Yes. Well another form of grouping I do with my regular English classes is to pair them. **(Umhum)** And then they work in pairs and they help each other, and it's really effective, I like it a lot. And the only time we separate is when we have assessments.

Sure, mkay. And then so I know you, you just described a, a number of different classes that you teach, so it's probably gonna be hard to describe a typical class period, but, but could you try to do that?

Um… yes. Um, for my English 1 classes, a typical class period would be, an opening activity. And while I take attendance, and maybe give the announcements, some days I have to do that. And then a lesson, and then a lot of practice and feedback, and we do some worksheets based on that. Um… oh just a variety of activities. I try to do 3 or 4 activities a day because we have a block schedule. **(Okay)** So I have to keep them moving. And, we usually take a break in the middle of the class. **(Umhum)** And I try to get as much feedback from them as I can to keep them engaged in learning.

Can you explain the way that you do that, that you get feedback from your students?

I will directly ask them questions, and if they don't know the answers, then we, we keep going, and they can ask someone else, or I will ask someone else, and then I'll ask them to repeat it so that they're, they're engaged in that learning all the time.

Sure. Mkay. And you mentioned that you have your students do an opening activity. (Yes) **Can you describe what that might look like, or an example?**

Yes. Sometimes I'll put stuff on the board, or, I'll give them a worksheet to do. Like an example would be A, An, and then I'll give them that work sheet, and then we'll go over it. I might put the rule up on the board, and then they can work in their pairs on that opening worksheet, and then we'll go over it together. And if it's something we'd already covered I'll grade it, if it' something new I don't.

Umhum, mkay. And then you mentioned that you might do 3 or 4 activities in a day. Could you… could you give me an example of an activity?

Yes. I will perhaps lecture part of the time. If I show a video there's usually a worksheet over it. We might do a dictionary activity; we might read for 20 minutes. I just like to do a variety of activities.

Sure, mkay. And . . .

Sometimes I will put review things in games so that we move around.

Umhum. And, and then so, could you explain what a game might be, then since you mentioned that?

Yes. I have like Tic Tack Toe; they'll pair up, **(Uh-huh)** and if they get the question correct, they get to put an X or an O on the board, and then that, their partner goes, and then they go back and forth. And then, every time they win then they start over, and then I give 'em a little prize like a piece a gum or something. Or I have a baseball game where they have the ball field on a paper, and then when they get it right they get to move a runner, and then they play baseball.

Fun.

I use the catch phrase timer a lot on different games where we'll do affixes, and if the timer goes off then they're out and they have to think of words that use those affixes. And just fun little activities like that to break up the long period.

Sure. So you're talkin' a—uh, when you're talkin' about your most effective strategies, one of the things you've talked about is games, and this baseball, this catch phrase timer. Do you know where you acquired those instructional strategies?

Well, a lot of it came from just experience, and taking a class that incorporated a lot a the games I just loved it. **('Kay)** And my training at working with at risk students too, tells them you know, they like that kind of activity. I also this last summer, and I can't remember what they're called, but I took 'em through Morningside College. And they were video classes. **('Kay)** And they were the best I've ever taken in my life. And they had a lot a these things in there.

Wow. Tell, tell me more about the video classes. You said it's the best you've taken in your life. What, what made it so?

Um… oh, I'm tryin' to think. They were just such usable things. I've taken so many classes that are just ideas, and they don't really work. **(Umhum)** These just really made sense, and they worked very well.

Right.

I came out with a hundred things I wanted to use.

Sure.

I just loved 'em.

Yeah. This is, this is very interesting to me. If we can keep goin' down this road a little bit. You, you said hey, I, I've, I learned a hundred things that I could use. Can you give me an example of one that you're still using today?

A quote a day on the board.

Quote a day on the board, okay.

Umhum.

Can, can you, can you think of, can you think of others?

Um… motivational things. **(Umhum)** Telling them how important it is to learn this and why we should learn it. **(Uh-huh)** And, the importance of opening activities, and the impor—importance of gimmicks. And I've always kinda done that. I've, like I found a

megaphone on a garage sale and I use that. And, um, and just different things that make it odd. I made, I made these head things with numbers on 'em, and they're really silly. They're headbands, but then they have a, a pipe cleaner with a number on it, and then when they're an expert on that vocabulary word, they have to wear that. And then everybody knows they're the expert on that number that day.

(Laugh) Right.

But just little gimmick things like that, **(Umhum)** I think just make it more interesting.

Sure, good. And so then I'm gonna go in the opposite direction. You know you said hey, this is the best class that I've taken, this was the most useful, however you worded that. What would you consider your least effective training? You said, you said you've taught for 37 years, is that right?

Thir—yeah, 32 years.

32 years. So in those 32 years, I would imagine you, I don't know, that, that some training was more effective than others. And so you said this video training through Morningside was, was your most effective. Could you describe the least effective training that you've received?

Hm… You know, I always find something interesting I can take away.

Umhum, sure.

Boy. Hm… I don't, I can't really think of anything I just really did not like.

Sure, okay.

I know a lot of what I learned in college was not useful. (Laugh)

Just as far as your, your undergrad college classes.

The undergrad, and even some of the graduate classes, **(Uh-huh)** weren't very useful. They weren't real.

Could, could you, uh, and you're starting to do it right now, I was gonna say can you identify why they weren't useful, or why they were not effective?

I think they have these ideals. Like one was talking about how oh, we shouldn't even have grades. Or, we shouldn't take off for things like having a late paper, or not having their name on their paper. And to me a lot a that is ideal, it's not realistic. **('Kay)** And a lot of it was just methods. And kids are so different than they were 20 years ago.

Right.

They're just totally different. **(Umhum)** And it just doesn't always work today.

Sure. Mkay.

I remember you don't smile till Christmas. **(Laughs)** That's when I started. And then they always used that philosophy. And **(Right)** boy that is not true today.

Right. Yeah, that's good. Um… I don't mean to cut you off. Was there somethin' else you were gonna say on that?

I, that's fine.

Okay. You, you talked about the gaming. My, my next question is which strategies you use consistently and systematically. You've talked about some different things, like you've talked about your opening activity, and using 3 or 4 activities, and the gimmicks and the games. And I don't wanna put words in your mouth. Are, are the, would those be strategies that you use consistently, systematically? Or are there others that you use consistently, systematically? What . . .

I use those continue—or yeah, regularly.

Yeah.

But I also do like… debate, I do cooperative learning, I do L to J. I do graphic organizers…

Sure, mkay.

The district has targeted vocabulary, and so graphic organizers and L to J are part of our requirements. But I kind of like 'em. And English teachers have used graphic organizers forever anyway, so.

Yeah. Could you describe a graphic organizer that you regularly use?

I have my students create their own.

'Kay.

That's a way for them to take notes over something, or to just keep a picture of it in their mind. The other day I had them do one over the 6 traits of writing, and, and they use graphic shapes to distinguish the different levels, and they use color. And, and then it's on whether or not they've understood the concept and the details, and get that down.

Right. And how, how did that go?

Well, I think I had out of 20, probably… 12 got the highest level, and then the rest were—out a 5, and the rest were 3's and 4's.

Mkay. And what do those numbers mean?

5 is proficient, and then 1 is weak.

Sure, 'kay. And, and those are grades that you assign then?

Yes, we have a rubric that we use. And then I've added to the school's rubric on things I expect.

Sure. So you, the school has a standard rubric.

Yes.

Yeah, mkay. If you were thinking about an area that you've thought, you know what, I'd like to be more effective in this area, anything to do with instruction, what, what would that be? If, if there were an area like that.

Oh, just in the area of instruction.

Umhum.

I think I'd like to be able to differentiate more in my regular English classes.

Umhum. And what do you mean by that, being able to differentiate?

Oh maybe have different word lists, different… readings for the students who maybe aren't engaged in learning as much. **(Umhum)** I'd like to incorporate maybe a variety of requirements instead of the whole class doing basically the same thing.

Sure. And as you think about that Joyce, what keeps you from doing that? Is, is it, uh, just what keeps you from doing that?

Yes, time. That's, that's it.

Sure, yeah. So you would say you know, you would—uh, and again I don't wanna put words in your mouth, but you would say that you know how to differentiate it, but you don't have the time to incorporate that into your classroom? Again, I don't wanna put words in your mouth.

Yes.

Okay. Alright, how do you know when a strategy you've used was effective? Like you talked to me about this rubric that you used on the 6 traits of writing I believe. And you said a 12 out of 20, if, if I remember correctly were at a proficient level.

Umhum.

So, when you're usin' various strategies like your opening activity, or your gimmicks, um… your ac—your, um… baseball or catch phrase, or acti—How do you know that that's effective, or not effective?

Well, later when the assessments come around, then I can tell. But a lot a times when we're playing a game, I can see which students aren't getting it.

Umhum.

And that gives me a chance to hopefully work with those students a little more, and give 'em a little more attention. Um… yeah, I lost my train a thought, but . . .

That's okay, we're just talkin' about how… how do you know when the, um, the strategies you've used, how do you know if they're effective or not effective, or how effective.

Well if it motivates the student, I have good feedback right away. You know like, oh that was fun, or that was good. Or, um, I mean that tells me it motivated 'em. And then the assessments would tell me okay, did they understand that.

Sure. Speaking of your assessments, do—have you created your assessments, are they district created? Can you tell me a little bit about your assessments?

I create all my assessments. I'm surprised that the new teachers don't do that much anymore. And, um… there are just a few of us, we were talking about that, 'cause some of us older ones, we, you know, it's, it's just easy for us to create those. And then it, it's hard for some a the new ones.

So the, the new ones, then what do they do for assessments?

They use textbook assessments.

Okay. And then how do you… how do you decide what you gonna assess students on? (Pause) Hello?

I'm thinking (Laugh)

Oh, okay, sorry. I just wanted to make sure we didn't get cut off. Yeah, I just was thinkin' about as, as you 're, you know, you're sayin' that you've done it for a while,

so you, you find it fairly easy. But I just was curious how you decide what you're gonna assess students on.

Well I guess, you know, I just make that decision what do I want them to remember forever.

Uh-huh.

And I kinda, well I also think about you know, I need some easy questions, I need some challenging questions, I need some that make them think further, not just recitation. If I have them memorize something, I tell them this must be memorized for the test. Like the 6 traits of writing. I want them to know what each of those is. **(Umhum)** And then I have application questions. I try to have variety. Um… and I've been through some training when we did the STARS, writing the test for the STARS, um, the standards.

Sure.

I got reinforced there on how to write tests and to avoid bias and things like that. **(Umhum)** And if I do have a bad question occasionally, just throw it out. And part of their responsibility is to challenge me on those questions, and we'll discuss them, and if I think it's unfair then I do just throw it out.

Umhum. And . . .

Hopefully it doesn't get that point.

Sure. So you're writing your own assessments. Uh, newer teachers you've described as using the textbook assessments. Does the, does the district have any influence on the assessments?

No.

Yeah, okay. Okay, this has, this has been really good Joyce. Is there anything else that you're thinkin' about that we haven't talked about, having to do with what, with what you know about teaching and what you're doing in the classroom?

Oh, I can't think of anything.

Mkay. Well I certainly appreciate your time. This end, ends the interview. And so I'm gonna, uh, turn the recorder off now at this time Joyce, and, and then I'm gonna take you off speaker phone.

Okay.