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COMPARISON OF ALTERNATIVELY CERTIFIED AND TRADITIONALLY CERTIFIED MISSOURI HIGH SCHOOL SCIENCE TEACHERS' PERCEPTIONS OF SELF-EFFICACY DURING THE INDUCTION PERIOD

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COMPARISON OF ALTERNATIVELY CERTIFIED AND TRADITIONALLY
CERTIFIED MISSOURI HIGH SCHOOL SCIENCE TEACHERS' PERCEPTIONS OF
SELF-EFFICACY DURING THE INDUCTION PERIOD

by

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Abstract

Sixty percent of America's teachers choose traditional baccalaureate programs while the remaining choose one of several alternative pathways. While certification/training is certainly important to preparing effective teachers, other research indicates that teacher efficacy serves as the foundation of teacher behaviors and classroom practice. The purpose of this study ($N = 94$ induction high school science teachers) was to determine the relationships between certification pathway and opportunities to observe modeling; between years of experience and personal teaching efficacy; and teachers' perceptions of what characteristics/experiences best explain personal teaching efficacy.

The Teacher Sense of Efficacy Scale was used in an on-line survey for Phase 1 ($n = 91$), to measure teacher self-efficacy. In Phase 2, a basic qualitative study was conducted using telephone interviews ($n = 2$) and a focus group ($n = 4$) along with a series of short essay questions from the online survey ($n = 91$).

The findings indicate a significant relationship ($p = 0.01$) between years of teaching and overall personal teaching-efficacy, student engagement, and instructional strategies; a relationship between opportunities to see modeling and certification pathway, where traditionally certified teachers had significantly more opportunities ($p = 0.000$); and a relationship between classroom management and opportunities to see modeling ($p = 0.005$). Qualitative analyses confirmed that traditionally-prepared teachers saw a range of "modeling" and model teachers; respondents related such opportunities to more effective teaching, especially in the realm of classroom management. As more teachers choose alternative certification, it is imperative that adequate opportunities to observe teaching

strategies are modeled during the certification process and once teachers enter the classroom; they must have intrinsic and extrinsic support to be successful.

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Chapter 1

Introduction

“I think I can, I think I can,” puffed the Little Engine That Could as he attempted to reach the top of the mountain with his load (Jacobs, 1910). This children’s story takes on a whole new meaning as we compare alternative and traditionally certified high school science teachers’ perceptions of their own personal teaching efficacy and the relationship between pathway to certification and efficacy. Perception of one’s ability to accomplish a task affects how well the task is performed. This is a basic concept for teachers who construct the learning environment for their students. If they perceive themselves as not capable (low self-efficacy) for a particular task research shows they will not be successful (Bandura, 1997; Tschannen-Moran, Hoy, A., & Hoy, W., 1998). Just like the “Little Engine That Could” reaching the top of the mountain because he thought he could, teachers with high self-efficacy face and overcome the “mountains” they encounter in their profession.

In 1983, the educational community was confronted with a mountain consisting of all its perceived failures in the government report, *A Nation at Risk*. Since that time the educational community has been plagued with government plans to “fix” the problem. *Goals 2000*, *No Child Left Behind*, and now *Race to the Top* are all government sponsored “solutions” for the problem of lower achieving schools and poor test scores. The cry is “the schools are responsible” from one side and “the schools are the solution” from the other (Cuban, 2001). The fact remains that our nation is one of the few whose vision is an education for every child and every child successful in their adventure with learning. Every classroom has one common denominator: the teacher.

This research investigates the relationship between personal teaching efficacy of induction high school science teachers and their pathway (alternative or traditional) to certification; this work is built on the concept of self-efficacy presented in Bandura's (1977) social cognitive theory. The research questions focus on three big ideas: (1) the relationship between type of certification (alternative or traditional) of Missouri induction high school science teachers and their perceptions of personal teaching efficacy, (2) the relationship between induction high school science teachers' years of experience and their perceptions of personal teaching efficacy, and (3) on what combination of characteristics best explains the personal teaching efficacy of Missouri induction high school science teachers (type of certification, undergraduate and graduate educational experiences, teaching environment, relatives who were teachers, and personal high school experience). The data were collected in two phases. Phase 1 ($n = 91$) was an online survey based on the "Teacher Sense of Efficacy Scale" (TSES) created and tested by Tschannen-Moran and Woolfolk Hoy (2001) along with a set of short answer questions and Phase 2 ($n = 94$) consisted of telephone interviews ($n = 2$) and a focus group ($n = 4$) along with the short answer questions from Phase 1 ($n = 91$). Note: Two of the focus group participants and one of the telephone interviews participants also participated in the online survey thus making the final number of participants 94.

Social cognitive theory and self-efficacy

Self-efficacy has come to mean "the belief in one's capabilities to organize and execute the courses of action required producing given attainments" (Bandura, 1997, p. 3). Research has found that an individual's perception of his or her own ability has a stronger influence over the outcome of a situation than the actual ability of the person: "Self-efficacy has to do with self-perceptions of competence rather than actual level of competence"

(Tschannen-Moran et al., 1998, p. 7). Furthermore, Bandura (2006) has described how and why such perceptions matter:

Perceived efficacy plays a key role in human functioning because it affects behavior not only indirectly, but by its impact on other determinants such as goals and aspirations, outcome expectation, affective proclivities, and perception of impediments and opportunities in the social environment. (p. 309)

As for the relation of self-efficacy to teaching, the construct of *teacher* efficacy was a result of researchers at the Rand Corporation adding two items to a teacher questionnaire in 1966: Item-1: “*When it comes right down to it, a teacher really can’t do much because most of a student’s motivation and performance depends on his or her home environment.*” Saying yes to this item states environment has more effect than the teacher. Out of this initial question a teacher’s belief about the power of these external factors compared to the influence of the teacher and schools has been labeled general teaching efficacy (GTE). Item-2: “*If I try really hard, I can get through to even the most difficult or unmotivated students.*” Saying yes to this statement indicates a teacher believes in their ability to reach almost any student. From this question has come the personal teaching efficacy (PTE) that is linked to a teacher’s personal belief about what individuals can accomplish (Tschannen-Moran et al., 1998).

There are many components and ways to analyze self-efficacy. Researchers (Ashton & Webb, 1986; Gibson & Dembo, 1984; Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998; Tschannen-Moran & Woolfolk Hoy, 2001) recognize two major divisions: general teaching efficacy (GTE) and personal teaching efficacy (PTE). Gibson and Dembo (1984) used the

term teaching efficacy (TE) and assumed it was a measure of outcome expectancy. This did not agree with Bandura's (1986) idea that outcome expectancy means the results the teacher expects based on personal performance. Gibson and Dembo's explanation of TE aligns more with Rotter's (1996) internal-external locus of control, the belief that actions affect outcomes (locus of control) rather than Bandura's (1997) self-efficacy, beliefs that a teacher can produce certain actions (perceived self-efficacy). Later research (Woolfolk Hoy 2001) indicates that TE is more of a reflection of a teacher's belief about the power of education to reach all children and linked with teacher's attitudes toward education (Woolfolk Hoy, 2001) rather than a measure of outcome expectancy. Woolfolk and Hoy called it general teaching efficacy (GTE). Personal teaching efficacy (PTE) represents the idea of a teacher's belief they can effectively reach all students and make a difference in student learning (Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998). Tschannen-Moran & Woolfolk Hoy's (2001) teacher sense of efficacy scale (TSES) is a strong predictor of teacher behavior and has three moderately correlated factors: student engagement, instructional strategies, and classroom management. These three factors have been further classified into two types of self-efficacy by Gibson and Dembo (1984) and Bandura (1997): instructional self-efficacy and pedagogical self-efficacy. Instructional self-efficacy relates to the teachers' (1) belief in their ability to construct a positive learning environment, (2) belief that all children can learn, regardless; (3) their level of content knowledge; and (4) their ability to transmit that knowledge to their students (Gibson & Dembo, 1984; Bandura, 1997). Pedagogical self-efficacy focuses on the teacher's ability (1) to move from being the source of information to being able to train the students to think creatively; (2) to use new technologies to discover information; and (3) to evaluate and use the knowledge available to them (Bandura, 1997).

Collective self-efficacy is another construct that influences and is influenced by teacher efficacy, thus affecting the learning outcomes of the students (Caprara, Barbaranelli, Borgogni, & Steca, 2003). Collective-efficacy focuses on the whole school environment as an entity that influences all the participants that make up the school community. The social structure of an education system is complex and multi-layered and each layer not only affects the other layers; but is also affected by them, the more efficacious a principal, then the more efficacious the staff. This collective self-efficacy filters into the classroom performance of the teachers and positively affects the students' performance (Bandura, 1997). Caprara et al. (2003) stated that teachers' sense of personal and collective-efficacy beliefs have an influence on teachers' attitudes about work and job satisfaction (p. 828). This research will focus on personal teacher self-efficacy and not on collective self-efficacy, since the data are anonymous and no connections can be established between participants and their specific schools. What is of interest for this study is the fact that low self-efficacy seems particularly detrimental to teaching.

Several studies conducted with elementary teachers on their perceptions of their self-efficacy related to teaching science demonstrated a correlation between low self-efficacy and poor performance in science teaching (Brand & Wilkins, 2007; Moseley, Reinke, & Bookout, 2002; Plourde, 2002). The study conducted by Brand and Wilkins (2007) with preservice elementary teachers showed that teachers' beliefs about science and math directly influenced their instructional practices. They went on to state: "low self-efficacy beliefs can be roadblocks to learning in that teachers possessing them lack the skills and abilities to be effective with students" (p. 301).

From Self-Efficacy to Effective Teaching and Learning

Harrison, Smithey, McAfee, and Weiner (2006) found that effective teachers' beliefs include but are not limited to: "a belief that all children can learn, but not all in the same way; a belief that teachers are learners and that children are teachers; a high level of respect for all students, high expectations for all students, but not the same for all, and a humanistic rather than custodial approach to classroom control" (Harrison et al., p. 72). An effective teacher will take responsibility for the learning that occurs in her/his classroom and develop a learning environment founded on the belief that all children can learn. Bandura (1977) makes the claim that "teachers with a sense of instructional efficacy operate with the belief that difficult students are teachable through extra effort and appropriate techniques" (p. 240). Therefore, an efficacious teacher (one with a high sense of teacher efficacy) is an effective teacher.

The teacher is the key factor in student achievement. Fulton, Yoon, and Lee (2005) revealed that students who have had an ineffective teacher during any given year may test as much as one year behind peers taught by a more effective teacher. Wright, Horn and Sanders (1997) discovered that when students were placed in the classroom of effective teachers for three years in a row, they scored 52-percentile higher on standardized tests than children placed with three low-performing teachers in a row (p. 63). This longitudinal study covered a three year period (grades 4-6) and used the Tennessee Value-Added Assessment System which gives statistical estimates of teacher and school effects on student achievement. When looking at this problem in the reverse, research by Mendro (1998) for the Dallas Public Schools indicated that children who have a poor performing teacher for just one year continue to reflect the negative effects through as many as three years after being placed with high performing teachers. He also states that "lower-achieving students are more likely

to be put with lower effectiveness teachers... Thus the negative effects of less effective teachers are being visited on students who probably need the most help” (p. 26). Sanders and Rivers (1996) from the University of Tennessee studied cumulative and residual effects of teachers in two metropolitan school districts on future student academic achievement and their results concurred with previous findings that the effective or ineffective teacher does make a difference.

For purposes of this research an effective teacher will be defined as the teacher who believes that all children can learn, takes responsibility for the learning that occurs in her/his classroom, and develops a positive learning environment. The ineffective teacher will be defined as the teacher who does not think every child can learn and sees his/her role in the classroom as the dispenser of knowledge and the learner is the one responsible to grasp the information, failure on the part of the student is not the teacher’s responsibility. To better determine the effectiveness of the participants, a series of short answer questions on the research instrument address the factors defining effective and non-effective teachers. These short answer questions ask teachers about their classroom management strategies and how the strategies work in their classroom, about their perceptions of their role in student success in their classroom and of their own effectiveness and finally, if teaching is a good fit for them. The factors addressed on the TSES addresses teacher self-efficacy in the areas of student engagement, instructional strategies, and classroom management. Assuming Bandura’s (1977) claims that efficacious teachers are also effective teachers, the researcher should be able to determine which teachers are effective and which are ineffective using the data collected on efficacy and teaching practices.

Of course, before one even achieves the status of “teacher,” he or she must fulfill basic criterion established by states’ Departments of Education. Obtaining a teaching certification does not necessarily mean the teacher is effective based on the criteria outlined above (all children can learn, takes responsibility for student learning, and establishes a positive learning environment). Rather, obtaining certification is usually the result of fulfilling other criteria, including but not limited to attaining a Bachelor’s Degree, maintaining a 2.5 GPA, and taking some type of proficiency test.

Teacher Certification

All teachers must have some type of certification before entering the classroom, the goal of which is to set a minimal standard of quality in our teaching staff. Missouri has two overarching pathways to certification; traditional and alternative (see Table 1). Those who follow the alternative route have several choices: alternative route through a college or university, Teach for America (TFA), Troops to Teachers (T3), and American Board for Certification of Teacher Excellence (ABCTE). Each certification pathway is discussed in detail in the review of literature. Regardless of the pathway chosen the same basic requirements apply to all of those who finally reach the classroom as a certified teacher in the state of Missouri with the main difference being the type of exit exam. For the traditional route and most of the alternative routes the teachers take the Praxis. The ABCTE certification is the only exception and those teachers take the ABCTE Exam. In Missouri, the basic requirements are the possession of a Bachelor’s degree with a minimum GPA of 2.5 on a 4.0 scale, passing a background check, and taking some type of proficiency exam.

The traditional pathway to a teaching certificate obtained through a school of education provides classes on how students learn, on pedagogy, and classroom management

along with multiple opportunities to observe in classrooms of experienced teachers, to prepare and present lessons, and to observe their professors modeling best practices.

Nontraditional pathways to certification do not necessarily provide the same experiences.

This research will focus specifically on Missouri certified teachers since the state of Missouri has distinct guidelines for each pathway, (traditional and nontraditional), to teacher certification and the opportunities each pathway provides to prepare their teachers.

Table 1 Agencies and Certification Types

Agency NCATE-National Council for Accreditation of Teacher Education Set of Six Standards for Universities and Colleges to follow when developing their teacher education programs of study.				Agency ABCTE-American Board Certification of Teacher Excellence (2008)
Traditional:60% Missouri college and university education programs		Alternative Missouri Programs NCAC-National Center for Alternative Certification		Alternative Missouri Program
<u>Program</u> School Of Education	<u>Program</u> Innovative Professional Education Programs	<u>Program</u> Temporary Authorization Certification Class B (TAC) (2000) Includes Teach for America	<u>Program</u> MO Alternative Certification Program Model (D) (2001)	<u>Program</u> ABCTE Teacher Certification Training
When completed all of the certification pathways lead to the Initial Professional Certification (IPC).				
Administered by Institute of Higher Ed Teacher Requirements <ul style="list-style-type: none"> • Bachelor’s Degree in content area with teacher education • 2.5 GPA • PRAXIS in educational pedagogy and content area • Background check 	Administered by Institute of Higher Ed Teacher Requirements <ul style="list-style-type: none"> • Bachelor’s Degree • 2.5 GPA • 3 years of employment where their degree major was significantly applied • Complete before certification coursework in: <ul style="list-style-type: none"> ○ Adolescent development ○ Psychology of learning ○ Teaching methodology in content area • Background check 	Administered by DESE Teacher Requirements <ul style="list-style-type: none"> • Bachelor’s Degree • 2.5 GPA • Proof of employment • Take 24 hours of education courses from specified list • 9 hours of course work in content area • PRAXIS II • Mentoring program • 3 years and DESE evaluation • Background check 	Administered by Institute of Higher Education Teacher Requirements <ul style="list-style-type: none"> • Bachelor’s degree • 2.5 GPA • Proof of employment • 9 hours of course work: Adolescent development, Psychology of Learning, & Methods course in content area • PRAXIS II • Mentoring program • PD (30 clock hours) • 2 yrs. and University evaluates • Background check 	Administered by ABCTE Teacher requirements <ul style="list-style-type: none"> • Bachelor’s degree • 2.5 GPA • Pass ABCTE exam • 60 classroom hours teaching experience (no specifications as to what area) • Background check
				Note: Troops to Teachers (T3s) provides funding and participant chooses route to classroom.

Problem

Once a teacher enters the classroom and becomes the teacher of record the certification route they chose becomes a statistic and is not considered when teachers are being evaluated. Induction teachers, those teachers in their first five years of teaching experience, seem to be the most at risk of leaving the profession according to the National Commission on Teaching and America's Future (2003); statistics on teacher retention indicate that 46% of teachers leave the classroom during the first five years. If there is a relationship between certification route and teacher efficacy (and therefore, according to the literature, effectiveness), perhaps certification pathway needs to be considered when induction teachers are being evaluated.

Alternative and traditional routes provide different experiences to pre-service teachers. The traditional certification route provides exposure to multiple and ongoing field-based opportunities where they observe, assist, tutor, instruct, and interact with several experienced teachers; many of these encounters begin during the sophomore year of teacher education. However, most of the alternative certification routes have the new teacher in the classroom as the primary teacher while simultaneously enrolled in classes on pedagogy and educational foundations. This approach gives the alternative certified teacher little opportunity to observe and learn from other more experienced teachers, but it gives them much more immediate practice in actual teaching. Research (Bransford, Brown, & Cocking, 1999; Darling-Hammond & Bransford, 2005; LePage, et.al., 2005) indicates that teachers need an understanding of how students learn, a strong pedagogical content knowledge, opportunities to explore different strategies and techniques, and the opportunity to have professors who model best practices in the areas of classroom management, scaffolding techniques and how to take a nurturing approach with students. Darling-Hammond (2006)

found that teacher preparation and knowledge in the areas of teaching and learning, content knowledge, and classroom experience are leading factors in teacher effectiveness. Does the pathway to certification matter? Do those who have multiple field-based experiences before becoming the teacher of record have higher perceptions of personal teaching efficacy than those who receive minimum training and teach while concurrently enrolled in educational courses? Several studies indicate that teacher efficacy serves as the foundation of teacher behaviors (Angle & Moseley, 2009; Enochs, Smith & Huinker, 2000; Tosun, 2000) and has a direct influence on classroom behaviors. It seems a teacher's perception of their own self-efficacy could affect how that teacher performs in the classroom and the pathways to certification do seem to provide different level of authentic experiences for the preservice teachers.

Purpose of the Study

The purpose of this study was to determine the relationships between certification pathway (traditional or alternative) and personal teaching efficacy, as well as years of experience (1-5) and personal teaching efficacy, when focused on induction high school science teachers in Missouri. These data were collected using an online survey that contains the self-efficacy instrument (Tschannen-Moran & Woolfolk Hoy, 2001) known as "Teacher Beliefs" along with selected short-answer questions. Semi-structured face-to-face and phone interviews were also conducted.

Research Questions

What is the relationship between type of certification (alternative or traditional) of Missouri induction high school science teachers and their perceptions of personal teaching efficacy?

What is the relationship between induction high school science teachers' life experiences: pathway, high school experiences, size of school, level of education, relatives who were teachers, years of teaching, age and their perceptions of personal teaching efficacy?

According to teachers themselves, what combination of characteristics or experiences best explain the personal teaching efficacy of Missouri induction high school science teachers? Such characteristics or experiences might include: type of certification pathway, undergraduate and graduate educational experiences, teaching environment, relatives who were teachers, years of experience, and personal high school experience.

Working Hypotheses

Hypothesis I. Induction teachers who have a traditional teaching certificate will have a higher mean score on personal teaching efficacy as measured by the Teacher Self-efficacy Scale (Tschannen-Moran & Woolfolk Hoy, 2001) in comparison to alternatively certified teachers.

IV: Type of certification (alternative or traditional)

DV: Mean score on personal teaching efficacy

Sub Hypothesis I. Induction teachers with a traditional teaching certificate have more opportunities to observe modeling of teaching strategies and management techniques during the certification process.

IV: Certification pathway

DV: Opportunities to see modeling of strategies and techniques

Hypothesis II. Missouri induction teachers with more years of experience will have a higher personal teaching efficacy as measured by the Teacher Self-efficacy Scale (Tschannen-Moran & Woolfolk Hoy, 2001) than those with less experience.

IV: Years of experience (1-5)

DV: Teacher personal teaching efficacy

Sub Hypothesis II. Missouri induction high school science teachers' personal teaching efficacy will be higher for those with an undergraduate major in science over education; those with whose certification area is in a science (i.e. biology, chemistry, physics) rather than in education with a science emphasis; those who are teaching in a school similar in size and location (rural, urban, suburban) to what they attended; and those who are younger.

IV: Undergraduate major, certification area, size and location of high school, age of respondent

DV: Personal teaching efficacy

Theory Building Hypothesis 3. The third question centers on the idea that personal teaching efficacy is formed by teachers' experiences and interactions (Bandura, 1995), which in turn shape how a person thinks, feels, acts and motivates themselves toward success. These processes (cognitive, motivational, affective, and selective) usually "operate in concert" (Bandura, 1997, p. 116). By analyzing data from open-ended questions on the survey, as well as in-depth interviews, this question examines *how* life experiences, certification training and the school environment shaped the respondents' personal teaching efficacy, which in turn influenced the teachers' actions.

Limitations

This section will briefly discuss the limitations present in the quantitative (Phase 1) and qualitative (Phase 2) portions of this research. The limitations during the quantitative portion of the research include obtaining an accurate list of Missouri induction teachers, having the participants self-report, not representing the voices of those induction teachers

who are not returning to the classroom, and the lack of sufficient information to include the effects of collective efficacy on personal teaching efficacy. Limitations that could impact the qualitative data collection are the researcher's lack of experience in interviewing, keeping the personal information of the participants anonymous, and maintaining an ethical and sensitive attitude toward the participants. As an experienced science teacher and chair of a high school science department with years of experience mentoring induction teachers, the author may also have some biases toward particular certification/training experiences.

The ability to obtain a complete, current list of all Missouri public high school science teachers with email addresses from the Department of Elementary and Secondary Education was easy but was not as accurate as expected. The initial list contained teachers who had taught in other states or private schools so their years of teaching was more than five, it contained some elementary teachers and some retired teachers who had reentered the work force. The fact that everyone who completed the survey was a returning teaching is also a limitation since the voice of the non-returning teachers is not being included in the data. The timing (fall) was a possible factor causing only teachers who were returning to the classroom to respond. The small sample size also posed some limitation on the study. There were only nine teachers with two years of experience who responded to the survey, 13 with ABCTE certification, and only four with other types of alternative certifications. Small numbers can have a larger effect on percentages.

Having respondents self-report on the online survey is also a limitation for this study since the personal bias of the respondent could cause them to present themselves differently than what actually transpires in their classrooms. This possible bias could be balanced out with a series of personal classroom observations on the part of the researcher. Further

research on the topic should include a series of classroom observations and perhaps interviews with the respondent's evaluator.

Self-efficacy is a multi-layered construct and two major components of a teacher's overall self-efficacy are personal teaching efficacy and collective-efficacy. The construct of collective-efficacy is based on the whole school climate and cannot be addressed in this research since the respondents are anonymous and there is no way to connect them with a specific school district.

When the self-efficacy scores were tabulated and compared to the data collected from the research done by Tschannen-Moran and Woolfolk Hoy (2001) all of the mean scores from the Gaither (2012) study were within one SD of the mean scores from that original study which seems to indicate reliable data (see Table 2).

Table 2

Comparison of Means between Tschannen-Moran & Woolfolk Hoy and Gaither Research

	Tschannen-Moran & Woolfolk Hoy	Gaither
TSES	7.1± .94	7.1± .821
Engagement	7.3± 1.1	6.6± .903
Instruction	7.3± 1.1	7.1± .933
Management	6.7± 1.1	7.3± .957

The limited interviewing experiences of the researcher provided one limitation during Phase 2. This was addressed by interviewing a local district's deputy superintendent in charge of hiring and the researcher's head principal who also does hiring interviews to gain some insight into types of questions to ask. Perhaps the more important limiting factors Merriam (2009) mentions are the sensitivity and integrity of the investigator toward the participants as well as the ethics of the researcher, and a willingness to report all the findings. To help control for these factors member checking was offered to the participants in both the

phone interviews and focus group, however, no one was interested. Instead, a fellow researcher read and provided feedback during the coding process and committee members also read and provided suggestions on the coding.

Definition of terms

Every profession has its set of jargon and education is no exception. The following definitions will be used in this research:

American Board Certification of Teacher Excellence (ABCTE): An alternative certification pathway funded by the United States Department of Education (1991) that provides training and administers its own certification test.

Adequate Yearly Progress (AYP): Standard set by the State of Missouri based on the No Child Left Behind Legislation that requires each district meet an annual proficiency level in student achievement.

Administrator: An educational professional that has at least a Bachelor's degree and a specialist's degree from an accredited college or university and holds a valid Teaching Certificate from the State of Missouri.

Alternative Certified Teacher: A certified teacher in the state of Missouri who gained their teaching certificate following a nontraditional path.

Career Continuous Professional Certificate (CCPC): The second tier of certification in Missouri which is valid for 99 years.

Certified Staff: Consists of teachers, principals, and guidance counselors, all those who hold a valid state teaching certificate.

Certified Teacher: Is any education professional that has at least a Bachelor's degree in a specific content area from an accredited college or university and holds valid Teaching Certificate from the State of Missouri.

Collective Efficacy: The perceived efficacy of a unified group (e.g., school staff).

CT: Term used to represent the cooperating teacher during the student teaching experience.

Efficacy Scale: Denotes the instrument used to collect data on self-efficacy.

Effective Teacher: The teacher, who believes that all children can learn, takes responsibility for the learning that occurs in her/his classroom, and develops a positive learning environment.

Experienced Teacher: Teacher who has more than five years of experience in the classroom, demonstrates excellence inside and outside of the classroom through consistent leadership and focused collaboration to maximize student learning.

Ineffective teacher: The teacher who does not think every child can learn and sees his/her role in the classroom as the dispenser of knowledge and the learner is the one responsible to grasp the information, failure on the part of the student is not the teacher's responsibility.

Induction Teacher: Any teacher who is in the first five years of their teaching experience.

Initial Professional Certification (IPC): The initial tier one teaching certificate that all induction teachers who have completed their certification pathway receive (in Missouri)

Mentor: An experienced teacher (≥ 5 years) who provides support for first and second year teachers in the area of classroom management, time management, and acclimating to the social climate of the school.

Pedagogy: The art or science of teaching.

Perceived Self-efficacy: The ability of a person to mentally grasp their self-efficacy, perceived takes the person's belief in their own ability to the next level in that they not only

believe in their own self-efficacy but they have the cognition to apply that belief. (Bandura, 1997)

Personal Teaching Efficacy: A teacher's belief in their own ability to motivate and instruct all students.

Self-Efficacy: A person's belief in their own ability to accomplish any given task. (A cognitive process)

Social Cognitive Theory: Bandura (1977) described this perspective as 'social cognitivism', conceptualized conditioning and reinforcement as operating through cognitive processes. This theory is the foundation basis of the self-efficacy construct.

Temporary Authorization Certificate (TAC): A one year renewable certificate administered by DESE that allows local school districts to choose the prospective teacher. This certificate eventually becomes an IPC when all requirements are met.

Teach for America (TFA): An alternative certification program that allows the TFA Corporation to place teachers in the St. Louis and Kansas City area schools.

Traditional Certification: A teaching certificate in the state of Missouri that is attained by successfully completing a college or university teacher training program of study.

Troops to Teachers: An alternative certification program funded by the U.S. Government for eligible members of the armed forces to obtain a teaching certificate.

Significance of study

This study set out to compare high school science teachers' personal teaching efficacy (PTE) and the type of teacher certification they hold, as well as determine the relationship between years of teaching experience and personal teaching efficacy. Currently no data is available to answer such questions. However, according to Woolfolk and Hoy (1998) teachers' sense of efficacy plays a powerful role in schooling (p. 234) and several research

studies stated that changing an established teacher's beliefs on their own self-efficacy is difficult (Bandura, 1977; Ohmart, 1992; Ross, 1994; Stein & Wang, 1988). This link between personal teaching efficacy and years of teaching experience as related to certification pathway needs to be explored and learning environments for the preservice teachers need to be provided that will aid in developing an increase in their perceived personal teaching efficacy.

Chapter 2

Review of Literature

Teachers have played a role in the lives of humans throughout history. From the time “mom” is the major teacher in the world of a child to the many years spent in formal education where the teacher is paramount in the process of learning, every individual is exposed to a variety of teachers. Progressivism, behaviorism, constructivism, the list goes on; however, all the tenets of educational philosophy have the common thread of teacher intertwined amongst and between, a connecting, unifying force in this process we name “education.” Teachers come in all shapes and sizes, from outgoing to quiet, soft spoken personalities, from young and just out of college to middle age with many years of life and work experience to draw upon. Every individual has a perception of what a teacher is and how a teacher functions because almost everyone has experienced the classroom environment and been taught by a teacher. In the book *Practice Makes Practice* Britzman (2003) says “it is little wonder that many students leave compulsory education believing that ‘anyone can teach’, for it is so easy to ‘read’ the teacher and anticipate her or his practices” (p. 27). She goes on to point out that many who enter teacher education have culture shock when they realize the complexity of teaching. This culture shock along with trying to balance their beliefs with their practice (Rhoton & Bowers, 2003), a multi-year process, aids in producing the almost 50% loss of induction teachers (National Commission of Teaching and America’s Future, 2003) during the first 5 years. Is there a common denominator that runs through those who wear the mantle of teacher that provides the endurance needed to stay the course? Albert Bandura’s (1977) social cognitive theory states that people with a high self-efficacy will be more likely to persist even when adverse situations arise. Perhaps high self-efficacy is a part of the reason teachers stay the course, but not the whole story. This

literature review will examine self-efficacy, the various preparation programs for certification (alternative and traditional) and mentoring experiences and show how these seemingly unrelated subjects are essential pieces of an efficacious teacher.

Self-efficacy

Multiple studies have been conducted since the Rand Corporation first introduced the construct of teacher self-efficacy in 1966. Many of these studies have been conducted to improve or generate a new and better test instrument, but others have been conducted to establish teacher self-efficacy among a variety of teacher groups. The majority has dealt with preservice or elementary teachers, a small portion have been directed toward high school teachers and even fewer toward high school science teachers. None have been found that address the correlation between high school science induction teachers and self-efficacy.

Self-efficacy studies. Protheroe's (2008) research on self-efficacy found that teachers with a stronger sense of self-efficacy "tend to exhibit greater levels of planning and organization, are more open to new ideas, are more willing to experiment with new methods to better meet the needs of their students, are more persistent and resilient when things do not go smoothly, are less critical of students when they make errors, and are less inclined to refer a difficult student to special education" (p. 42). Her study also indicated that higher self-efficacy leads to persistence or retention of the teachers and higher expectations for their students. This establishes a link between student success in the classroom and teacher self-efficacy. Several additional studies indicate that teacher self-efficacy serves as the foundation of teacher behaviors (Angie & Moseley, 2009; Enochs, Smith, & Hunter, 2000; Tosun, 2000) and thus affects the expectations that teachers have for their classrooms. Many of the research articles on self-efficacy related to improving the testing instrument rather than determining self-efficacy in teachers and changes in self-efficacy, this section will address

the research dealing with teacher self-efficacy in the first section and the research dealing with improving instruments for assessing self-efficacy in the second section.

Teacher self-efficacy. Multiple studies were found using professional development as a way to improve teacher self-efficacy. Moseley, Reinke, and Bookout (2002) studied the effect of a three day outdoor environmental education program on the self-efficacy attitudes of preservice elementary teachers specifically to determine the teacher's belief that he or she could teach environmental education effectively and measure the outcome expectancy or the teacher's estimation of her or his influence on student learning. The results indicated that the self-efficacy of preservice teachers was high before the program and remained unchanged during the program but dropped seven weeks after the program ended. Moseley et al. attributed the drop in self-efficacy to be a result of the preservice teachers' reevaluation of their ability to teach as they learned more about actual teaching methods (p. 9). Three other studies (Bleicher & Lindgren, 2005; Nietfeld & Cao, 2003; Yoon, Pedretti, Bencze, Hewitt, Perris, & Van Oostveen, 2006) looked at specific strategies that might improve preservice teachers' self-efficacy. Yoon et al. (2006) used case studies on robotics with middle school preservice teachers and found no improvement in content knowledge self-efficacy, but the participants did make connections between theory and practice (p.15). Nietfeld and Cao (2003) found that the preservice teachers' personal teaching efficacy improved when the professor's instructional strategies included whole-group discussion and in-class illustration (p 9).

Bleicher and Lindgren (2005) found that the teaching science methods courses from a constructivist perspective has more effect on overcoming elementary preservice teachers reluctance to teach science than increasing the number of preservice elementary science

courses they are required to take (p. 205). They conducted a constructivist-oriented methods class for preservice teachers based on the three elements of the constructivist theory:

(1) a student's prior knowledge is a key factor affecting future learning because what a learner already knows or believes interacts with a new conception to which the learner has been exposed, (2) students construct meaning through interactions with others, with materials, and by observation and exploration of interesting and challenging activities, (3) students should construct understanding around core concepts and big ideas. (p. 207)

Bleicher and Lindgren both taught the same methods course at two different sites based on the philosophy that the preservice elementary teachers should "construct their own knowledge" (p. 211). They used hands-on activities and demonstrations mixed with class discussions to model strategies for teaching science concepts. After the six-week course the participants changes in self-efficacy were measured using the Science Teaching Efficacy Belief Instrument (STEBI-B) developed by Enochs and Riggs (1990). They found no significant change in pre post outcome expectancy but they did find that the preservice teachers expressed more confidence in presenting science concepts to their own students. (p. 221)

Posnanski (2002) also used a research based professional development model to improve elementary science teachers' self-efficacy in regards to teaching science. These were practicing teachers who used the Biological Science Curriculum Study (BSCS) in-service program to enhance their knowledge of biological science. Posnanski reported that the in-service model of professional development was successful in improving the practicing elementary teachers' self-efficacy (p. 209). Several studies (Khourey-Bowers & Simonis, 2004; Roberts, Henson, & Tharp, 2003; Swackhamer, Koellner, Basile, & Kimbrough, 2009)

used in-service programs to attempt making a change in teachers' self-efficacy. All of these studies were conducted with practicing teachers and all showed an improvement in teacher self-efficacy.

From the studies analyzed it seems that preservice teachers do not improve their self-efficacy from participating in professional development activities, but some positive change can be measured when they participate in courses where the instructors strive to enhance the preservice teachers understanding of personal self-efficacy, as seen in the study conducted by Nietfeld and Cao (2003). A key component was uncovered in their study of teaching outdoor environmental education to preservice teachers (Moseley, Reinke, & Bookout, 2002). They concluded that the preservice teachers did not yet grasp the complexity of the art of teaching and after a seven week break they had time to reevaluate and question their abilities in light of what new information they had learned in their methods course (p. 13).

Improving self-efficacy instruments. The majority of the remaining research was focused on further development of various science efficacy belief instruments, mostly aimed at elementary science teachers. This review will focus on the study done by Enochs and Riggs (1990) whose purpose was “to provide a valid and reliable measure of teach self-efficacy of preservice elementary science teachers” (p.9). They modified the Riggs (1988) Science Teaching efficacy Belief Instrument Form A (STEBI A) from an in-service orientation to a pre-service orientation (p. 9). The items were reworded in the future tense, assigned the name STEBI B and given to 212 preservice teachers. “The results of the study indicate that the STEBI B is a valid and reliable measure of personal science teaching efficacy and science teaching outcome expectancy for preservice elementary teachers” (p. 13). The next section is a detailed analysis of two self-efficacy instruments: *Teachers' Sense*

of Efficacy Scale (long form) developed by Tschannen-Moran and Woolfolk (2001) and *Teacher Efficacy Scale* originally developed by Gibson and Dembo (1984).

Self-efficacy instruments. The construct of teacher efficacy was a result of researchers at the Rand Corporation adding two items to a teacher questionnaire in 1966: Item-1: “*When it comes right down to it, a teacher really can’t do much because most of a student’s motivation and performance depends on his or her home environment.*” Item-2: “*If I try really hard, I can get through to even the most difficult or unmotivated students.*” From these two questions have come the general teaching efficacy (GTE) and the personal teaching efficacy (PTE) instruments that are linked to the teachers’ belief about the influence of the teacher versus the school (GTE) and the teacher’s personal belief (PTE) about what individuals can accomplish (Tschannen-Moran et al., 1998).

Bandura (1997) in his book, *Self-efficacy: The Exercise of Control* describes mastery experiences, physiological and emotional states, vicarious experiences, and social persuasion as the four sources that help form efficacy. Mastery experiences are encounters where the teacher feels as if they were successful and “mastered” the experience and according to Bandura this is the most powerful source of information. Physiological and emotional states refer to how the teacher perceives an encounter (personal success/failure/ my fault/lack of outside support) and either reinforce or impair feelings of success and confidence. Being too highly affected by the situation brings impairment to the person’s sense of personal efficacy while moderate arousal has the opposite effect (Tschannen-Morgan, 1998, p. 19). Vicarious experiences could also be termed modeling. Teachers can change their beliefs about their own self-efficacy from observing others who are modeling exceptional teaching methods. The fourth indicator of self-efficacy, social persuasion, is simply feedback on the teacher’s

ability to influence student performance. The more credible the source, the more the influence that source has (Bandura, 1997).

Analysis of Self-Efficacy Instruments. Multiple instruments have been developed from the original two Rand questions. This review analyzes and compares two of those instruments: *Teachers' Sense of Efficacy Scale* (long form) developed by Tschannen-Moran and Woolfolk (1998) and *Teacher Efficacy Scale* originally developed by Gibson and Dembo (1984).

Teachers' sense of efficacy scale: Tschannen-Moran & Woolfolk Hoy. The Teachers' Sense of Self-efficacy Scale (TSES) was developed by Megan Tschannen-Moran and Anita Woolfolk Hoy for use at Ohio State University (1998) (see Appendix A). The TSES in its final form is a 24-item instrument using a Likert 9-point scale based on Bandura's model (see Appendix B). All of the questions begin with either: "How much can you", "How well can you", or "To what extent can you" putting the focus on the teacher's perceptions which allows all of the questions to be scored in the same order (no reverse scoring is needed).

A seminar group, all with some teaching experience, generated the initial instrument with 52 items, 23 of the items came from Bandura's 30-item scale, the remaining were generated by the group. Three separate studies, using pre-service or in-service teachers, were conducted and after each study, items were deducted or added based on the analysis of the results (see Appendix C Summary). Principal-axis factoring was conducted to determine factors using eigenvalues. Study two (32 item instrument) yielded eight factors using eigenvalues greater than one which accounted for 63% of the variance. A Scree test was used to narrow the factors to just three: efficacy for student engagement (8 items), efficacy for instructional strategies (7 items), and efficacy for classroom management (3 items); each

with moderate reliability: Engagement = 0.82, instruction = 0.81, and management = 0.71.

The researchers used Emmer's teacher-for-classroom-management scale to generate items and also added items to address the needs of capable students (Tschannen-Moran & Hoy, 2001) before conducting their third study which produced the same three factors (efficacy for student engagement-12 items, efficacy for instructional strategies-15 items, and efficacy for classroom management-9 items). The reliability of the instrument remained high for both the long and the short version: (see Table 3).

Table 3 Reliability of 24-item and 12-item instrument

	12- Item	24-Item
Efficacy for instructional strategies	0.91	0.86
Efficacy for classroom management	0.90	0.86
Efficacy for student engagement	0.87	0.81

To determine the construct validity the participants in study group three also took the Rand ($r = 0.35$ & 0.28), the PTE ($r = 0.48$), and the GTE ($r = 0.30$) with $p < 0.01$ indicating a moderate correlation.

Robin Henson (2001) raises the question on the sources of information on teacher efficacy since almost all the studies undertaken up to this point have been teachers' self-reporting. Adding classroom observations to this instrument would provide another source of data and allow for triangulation of the findings and make this a strong instrument. It covers three main areas of interest in teacher self-efficacy: classroom management, instructional strategies, and student engagement supported with research. The instrument does not collect data on general teacher efficacy or the effect of the environment (external) on student learning.

Teacher Efficacy Scale: Gibson and Dembo. The Teacher Efficacy Scale—TES, based on Bandura's theory of social cognition was developed by Sherri Gibson and Myron

Dembo (1984) to provide construct validation support and examine the relationship between teacher efficacy (PTE) and observable teacher behaviors (GTE) (Gibson & Dembo, 1984, p. 569) (see Appendix D). The final teacher efficacy scale is a 30-item instrument using a 6-point Likert scale. The items switch focus between teacher's personal feelings, global views on teacher effect, effects of parents, effects of school environment, and effects of community. Some of the items are concise and easy to understand; others are long and more confusing.

Concise: Item-7: I have enough training to deal with almost any learning problem.

Confusing: Item-3: If parents comment to me that their child behaves much better at school than he/she does at home, it would probably be because I have some specific technique of managing his/her behavior which they may lack (p. 581). Both of these items are addressing personal teaching efficacy but, Item-3 is long and almost apologetic; using words like "if", "probably", and "they may lack."

The 30-item instrument was administered to 208 elementary teachers at 13 schools in phase one. Analysis of the data showed only 16 of the 30-items had internal consistency of reliability (Cronbach's alpha) and only those were used in the analysis (all 30 remained on the instrument) (Gibson & Dembo, 1984, p.574). This should have been an indicator to the researchers that they needed to revise or remove the items that did not have internal consistency of reliability. Phase two (55 different teachers) used the 30-item scale along with a 20-item open-ended efficacy instrument and four other assessments over a period of four weeks: verbal facility test, controlled association test, finding useful parts test and planning test (p. 571). These data were analyzed using a multirate-multimethod matrix and correlations within and between variables ($0.42 p < 0.001$) (see Appendix E Summary).

Classroom observations were the component of phase three and the eight participants (elementary teachers) were selected from the original participants in phase one, four high and

four low efficacy teachers. Mean scores and one tailed t-tests (teacher as unit of analysis) were used to determine teacher use-of-time and teacher-student dyadic behavior (Gibson & Dembo, 1984). Significant differences were found between low and high efficacy teachers for both factors. The teacher efficacy scale developed by Gibson and Dembo was an early attempt at creating an instrument to reliably measure self-efficacy, but has areas that need improvement. The current instrument only has 16 out of 30 items that are reliable so the instrument needs more field tests to remove and perhaps replace those unreliable items. The instrument measures two independent factors: teaching efficacy and personal efficacy; but using the strongly agree-strongly disagree format means that some of the items must be reverse scored if you want the high score on each scale to indicate strong sense of self-efficacy (Woolfolk Hoy, 2010). Using actual classroom observations as a part of their research process is a strength and provided the researchers opportunity for triangulation of the data collected.

Summary comparison of the instruments. (see Table 4) Both of the instruments analyzed have strengths and weaknesses. The TSES measures personal teacher efficacy in three specific areas and the TES measures personal teacher efficacy and general teacher efficacy. As discussed in chapter1 there is some contention that this scale not actually Personal teaching efficacy. The researcher should choose the instrument based on what outcomes are desired. It is the researcher's opinion that the TSES is easier to score and breaks the results into three factors (efficacy for student engagement, efficacy for instructional strategies, and efficacy for classroom management) that are all vital in measuring personal teacher efficacy, but does not address general teacher efficacy directly. Using the Rand, PTE, and GTE to determine construct validity is also a strong point for the studies conducted by Tschannen-Moran and Woolfolk Hoy. However, adding the element of

classroom observations using specific instruments to measure teacher use-of-time and teacher-student dyadic behavior allows the TES developed by Gibson and Dembo to add a unique dimension to their study. The classroom observations could be a part of any teacher efficacy study and is not bonded to the TES. Finally, Bandura (2006) states that items should use “can do” rather than “will do” because can is a judgment of capability and will is a statement of intent (p. 308). Tschannen-Moran and Woolfolk Hoy use only “can do” statements for their items but Gibson & Dembo have four items (#s 20, 23, 24 & 29) that use “would”.

Table 4 Comparing Teacher Efficacy Instruments

Name	Teacher Efficacy Scale Gibson & Dembo (1984)	Teacher Self-efficacy Scale Tschannen-Moran & Woolfolk Hoy (1998)												
Description	30-item Based on Bandura’s theory of social cognition	24-item Long form 12-item Short form Based on Bandura’s theory of social cognition												
Scale	Likert scale 1-6 1-strongly disagree 2-moderately disagree 3-disagree slightly more than agree 4-agree slightly more than disagree 5-moderately agree 6-strongly agree.	Likert scale 1-9 anchors at: 1—nothing 3—very little 5—some influence 7—quite a bit 9—a great deal												
Factors measured	Teaching Efficacy (9 items) Personal Teaching Efficacy(7 items)	Efficacy for student engagement (8 items) Efficacy for instructional strategies (8 items) Efficacy for Classroom management (8 items)												
Scoring	Reverse Scoring For high score scale to indicate strong sense of efficacy for Personal Efficacy	No adaptations needed for scoring												
Item reliability	Only 16 of 30 items have acceptable reliability coefficients	All items have acceptable reliability coefficients Results—Reliability <table style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td>12 item</td> <td>24 item</td> </tr> <tr> <td>Instruction</td> <td>0.91</td> <td>0.86</td> </tr> <tr> <td>Management</td> <td>0.90</td> <td>0.86</td> </tr> <tr> <td>Engagement</td> <td>0.87</td> <td>0.81</td> </tr> </table>		12 item	24 item	Instruction	0.91	0.86	Management	0.90	0.86	Engagement	0.87	0.81
	12 item	24 item												
Instruction	0.91	0.86												
Management	0.90	0.86												
Engagement	0.87	0.81												
Validity	Used classroom observations to provide corroborating evidence of results on efficacy (strengthens construct validity)	Construct validity: Rand: $r = 0.35$ & 0.28 , $p < 0.01$ PTE: $r = 0.48$, $p < 0.01$ GTE: $r = 0.30$, $p < 0.01$												
Personal observations	Study 2 seemed unnecessary Some items unreliable	Items shorter and easier to comprehend Construct measures for 3 factors												

Not much construct validity apparent
 Measures for 2 factors
 Reverse scoring necessary
 Classroom observations provided source for corroborating across variants (triangulation)
 Uses “would” in 4 items (#s 20, 23, 24, & 29)

More research to support construct
 All items use “can” phrasing

Teacher Certification

All teachers must have some type of certification before entering the classroom which helps to set a minimal standard of quality which provides qualified and effective teachers.

This umbrella of state standards for teacher certification helps control the quality and effectiveness of the teachers that are placed in classrooms all around the nation. In Missouri, all certifications routes have the same basic requirements of a Bachelor’s degree with a minimum GPA of 2.5 on a 4.0 scale, passing a background check, and taking some type of proficiency exam. The certification process in Missouri was revised in 2003 from a four tier to a two tier system (DESE, 2012). Tier one is the Initial Professional Certificate (IPC) which is valid for four years and the Career Continuous Professional Certificate (CCPC) is tier two and remains valid for 99 years if the criterion are successful fulfilled. To obtain the IPC the applicant must have a recommendation for certification from the Teacher Education department at the college or university where they graduated in addition to a minimum GPA of 2.5 in overall and content area and successfully pass the Praxis test(s). The IPC certified educator has four years to successfully complete the requirements and move on to Tier two (CCPC). These requirements are: participate in a two year district mentoring program; complete 30 hours of professional development; participate in a Beginning Teacher Assistance program; participate in a performance based teacher evaluation; complete four years of approved teaching experience; and have local professional development (DESE, 2012). To maintain the CCPC certificate the teacher must either complete 15 hours of

professional development per year and have a local professional development plan or have two of the following three completed: ten years of teaching experience, a master's degree, or National Board Certification.

Missouri has two overarching pathways, traditional and alternative certification, for obtaining a teaching certificate. Regardless of the pathway chosen the same basic requirements apply to all of those who finally reach the classroom as a certified teacher in the state of Missouri with the main difference being the type of exit exam. For the traditional route and most of the alternative routes the teachers take the Praxis. The ABCTE certification is the only exception and those teachers take the ABCTE Exam (see Table 1).

Traditional. In Missouri the traditional route goes through colleges and departments of education that develop a program of study under the guidelines provided by the state department of education. The National Council for Accreditation of Teacher Education (NCATE) is one of the agencies that establish standards for college and university teacher education programs in the United States. These teachers receive the Initial Professional Certificate (IPC).

Alternative: State sponsored alternative programs. The National Center for Alternative Certification (NCAC) is one agency that tracks the various programs that lead to alternative teacher certification. The State of Missouri has approved two alternative certification programs: the Temporary Authorization Certificate, Class B (TAC) approved in November, 2000 and the Missouri Alternative Certification Program Model (D) approved in October, 2001; that are listed with the NCAC. This program leads to an IPC certificate when all the requirements are met.

Alternative: Teach for America. Missouri also has a Teach for America Program (TFA) that allows the Teach for America Corporation to administer this program and place

its teachers in St. Louis and Kansas City area schools. Teach for America teachers are certified through the Temporary Authorization Certificate (TAC) which allows the local school district to choose the prospective teacher and is administered by the Educator Certification Section at the Department of Elementary and Secondary Education (DESE). This is a one year renewable certificate that becomes an IPC when all the requirements are met.

Alternative: Troops to Teachers. The Defense Activity for Non-Traditional Education Support (DANTES) known by most as Troops to Teachers is a program of the U.S. Government that provides funding for eligible members of the armed forces to obtain a teaching certificate for elementary, secondary, or vocational schools (Department of Defense, 2009). DANTES provides scholarships for retired or decommissioned military personal to attend a college of education and obtain a teaching certificate. These funds can be used for a traditional certificate pathway or an alternative pathway approved by the state of Missouri and leads to an IPC when all the requirements are met.

Alternative: American Board for Certification of Teacher Excellence. The American Board for Certification of Teacher Excellence (ABCTE), which is funded by the United States Department of Education and founded in 1991, is one of the most recent additions to the choices for alternative certification in the state of Missouri. In 2008 Senate Bill 1066 authorized ABCTE certification as a new form of teacher certification in the state of Missouri. People who hold a certificate from the American Board for Certification of Teacher Excellence (ABCTE) are eligible for a regular Missouri teaching certificate in the areas of English/Language Arts, Biology, Chemistry, General Science, Mathematics, Physics and U.S./World History (DESE, 2009). These teachers receive the IPC certificate.

Summary of Certification Types: Each of these paths eventually leads teachers into classrooms, but does the path taken have any impact on the teachers' rate of retention and his/her ability to engage students, develop effective instructional strategies and manage their classrooms? The Committee on the Study of Teacher Preparation Programs in the United States, who conducted a six year study of teacher education in the United States, claimed that there is no significant difference between traditional or alternative certification programs and the quality of the teacher produced. However, they made this statement based on data collected from only three of the 50 states and they also stated there was little empirical evidence to support the claim (National Research Council, 2010). The more important finding from the study was their conclusion that "clearer understanding of the content and character of effective teacher preparation is critical to improving it" (p. 7). The committee presented the conclusion that there is little definitive evidence that supports one type of certification pathway as more effective than any other and makes the recommendation that three areas be studied:

- (1) Comparisons of programs and pathways in terms of their selectivity, their timing (whether teachers complete most of their training before or after becoming a classroom teacher); and their specific components and characteristics (i.e., instruction in subject matter, field experiences;
- (2) The effectiveness of various approaches to preparing teachers in classroom management and teaching diverse learners; and
- (3) The influence of aspects of programs structure, such as the design and timing of field experiences and the integration of teacher preparation coursework with coursework in other university departments. (p. 174)

The National Academy of Education funded a two year study on the “core concepts and strategies that should inform initial teacher preparation whether it is delivered in traditional or nontraditional settings” (Darling-Hammond & Bransford, 2005, p. vii). The goals of this research were (1) to find evidence to support what students need to “experience to grow and learn”, (2) what kind of knowledge do teachers need to have to facilitate these experiences, and (3) what kinds of experiences do teachers need to have to obtain that kind of knowledge (p. 21). Findings from the study indicate that: (1) teachers need to understand how students learn in order to frame how they present information to their students (Bransford, Brown, & Cocking, 1999); (2) teachers need a strong pedagogical content knowledge to understand how to present content so that students can learn and they need the opportunity to explore different techniques and how they affect learning (Darling-Hammond & Bransford, 2005); and (3) teacher educators need to model best practices in the areas of classroom management, how to scaffold learning activities, moral practices and a caring approach (LePage, Darling-Hammond, Akar, Gutierrez, Jenkins-Gunn, & Rosebrock, 2005).

Mentoring

Another piece of the puzzle that forms the efficacious teacher is their mentoring experiences which provide verbal encouragements from a master teacher on the inductions teachers’ capabilities as an educator (Bandura, 1995). There is a critical shortage of qualified teachers due to lack of recruitment, teacher attrition, insufficient salary, lack of administrative support and lack of planning time (Corwin, 2005; Ingersoll, 2009; Ingersoll & Perda, 2009; Lopez, Lash, Schaffa, Shields, & Wagner, 2004; Smith & Ingersoll, 2004). In the area of science, teachers are being asked to teach out of their qualified area and do not feel adequately prepared. New science teachers have difficulty incorporating content with pedagogical knowledge even when teaching in their specific content area. One possible

solution in the area of science is new teacher mentoring. Since 2003 Missouri has required all public schools to provide a mentoring program for all induction teachers for their first 2 years in the teaching profession, but is this sufficient? The basic definition of an induction program is any program that assists the induction teacher as they begin their career as an educator and does not give specific parameters to govern the mentoring or induction program.

The evidence from induction teachers is presenting mixed results. According to D. Wong (Corwin, Ed., 2005) new teachers said they would have been lost without their mentors but most provided little evidence that one-to-one mentoring offered much support. In surveys conducted with new teachers 56% of the teachers reported that no extra assistance was offered to them, 87% said they had a mentor, but only 17% said the mentors ever observed them teach (Corwin, 2005). He also discovered that only 1% of all new teachers surveyed received any type of ongoing support after their first year.

In a case study on the collateral damage done by mentoring programs Kilburg & Hancock (2006) found that all of the 149 teams they studied listed lack of time as a major factor in feeling unsuccessful in their mentoring experiences. This was a qualitative study done with surveys and discussion groups over a 2 year period. Their goal was to develop some interventions that would prevent a negative impact from the mentoring process. The other main areas of concern were mentors not in the same school, different plan hours, different subject areas or grade levels and just a poor match. Many of the interventions were simple: match planning times, grade levels, subject areas, and assign mentors from the same school building. This study mainly pointed out problems that would make mentoring, not an induction program, less effective and gave simplistic solutions.

Smith and Ingersoll (2004) found that full time teachers who are involved in some type of induction program in their induction years were 88% less likely to leave or move than part-time beginning teachers who were also involved in some type of induction program. On the other hand Lopez, Lash, Schaffer, Shields, and Wagner (2004) did a review of the research that has already been done on the impact of beginning teacher induction on teacher quality and retention and found no significant findings as to whether it works or not. They retrieved three hundred and seventy nine articles dealing with research on induction programs, chose twelve to review. They found that few rigorous studies exist on the impact induction on teacher quality and teacher retention. They found poor controls and contamination of treatment groups by having the comparison groups in the same schools. Their results found that three studies reported a positive relationship between participation in a teacher induction program and the teacher staying in the same teaching position and two studies showed mixed results. The four out of ten that reviewed teacher quality reported a positive relationship between participation in an induction program and beginning teacher effectiveness, four studies indicated mixed results and two found no impact.

Research done by Kelley (2004) at the University of Colorado over a 5 year period found positive long term retention among induction teachers who participated in the Partners in Education (PIE) program. The three components of the PIE Induction program are: An induction program for fully certified novice teachers, called PIE teachers, tied to a master's degree program at UCB (University of Colorado-Boulder); full time release of expert teachers, called clinical professors, from participating districts to (a) provide intensive mentoring of novice teachers, (b) work on campus as methods instructors or supervisors of teacher candidates, and (c) serve as teacher leaders on school district curriculum and staff development projects; and UCB faculty resources such as consulting, district and school

program evaluations, workshops on curriculum and assessment, and collaborative research projects offered *quid pro quo* to school districts (p. 3).

The results from the study indicated that 94% of the participants were still teaching after 4 years in the program (Kelley, 2004). According to National Commission on Teaching and America's Future (NCTAF), up to 40% of teachers leave after just 4 years and 46% leave after 5 years of teaching (2002). This indicates that the induction program used for the PIE teachers had a significant effect on teacher retention. This study does have some limitations in that it encompassed only six school districts in the state of Colorado which were all local to the University. The demographics do not indicate the make-up or size of the districts involved in the study. Even though this is a small sample size it does provide evidence to support the importance of induction programs for beginning teachers that involves more than just providing a mentor.

Research (Greiman, Torres, Burris, & Kitchel, 2007) suggests that successful mentoring is more likely to occur when the mentor and mentee have similar beliefs and attitudes towards educational pedagogy. Wang, Odell, and Schwille (2008) in their literature review on the effects of teacher induction on beginning teachers found that "few studies capture its effects on teaching practice and student achievement" (p. 132). In the section specifically on mentoring Wang et al. found two key elements: (1) the initial relationship between mentor and induction teacher plays a role in how much the induction teacher is able to learn from their mentor; (2) to be effective mentors must have some training in the art of mentoring. For the induction science educator this would imply having a mentor from the science department who has a similar approach to education would probably enhance what the novice teacher is able to learn from his mentor. To prepare and retain quality teachers we

need to develop induction programs that are but steps in the lifelong learning process that we call education.

Summary

The literature is rich with research trying to determine why some teachers are effective, persist even in the most unappealing work environments and still manage to have a positive impact on their students. Some studies indicate that mentoring induction teachers provides the foundational support necessary to allow that new teacher to become a part of the teaching community and flourish while other studies indicate that the mentoring had little or no effect. In the area of certification pathway proponents from the traditional point of view insist that the teacher education programs better prepare preservice teachers to take their place in the classroom and change the learner's outcome. On the other hand, proponents of alternative certification insist that professionals who make a career change and bring their life experiences into the classroom are the moving force behind reclaiming our children and fixing the broken educational system. The final side of the triangle is the construct of self-efficacy which according to Bandura (1997) is the "exercise of control". The literature provides research to support all these multiple viewpoints. The question is not about the effects from the type of certification or whether the beginning teacher has a mentor, but rather is self-efficacy the nugget that brings success to the teacher. Is a person's sense of personal teaching efficacy the driving force behind all the successful teachers? If this is true, how do induction teachers develop that self-efficacy?

Chapter 3

Methods

This chapter discusses the overall conceptual design of the study, the analysis of the collection instrument and method of sample selection. The areas of attrition, limitations, and possible researcher bias and assumptions are also addressed. The research focuses on two of the paths to teacher certification: traditional and alternative. For purposes of this study a traditional certification is defined as a teaching certificate in the state of Missouri that is attained by successfully completing a college or university teacher training program of study. An alternative certification is defined as a teaching certificated attained through a non-traditional path: American Board Certification of Teacher Excellence (ABCTE), Troops to Teachers, Teach for America, and Alternative through a college or University.

Design of Study

This sequential mixed methods research is organized into two phases and based on Bandura's social cognitive theory with the purpose of determining the relationship between personal teaching efficacy and certification pathway (traditional and alternative) of science teachers in Missouri during their induction years (years 1-5).

The study is designed to answer three questions: (1) What is the relationship between type of certification (alternative or traditional) of Missouri induction high school science teachers and their perceptions of personal teaching efficacy; (2) What is the relationship between induction high school science teachers' years of experience and their perceptions of personal teaching efficacy; and (3) According to teachers themselves, what combination of characteristics or experiences best explain the personal teaching efficacy of Missouri induction high school science teachers? Such characteristics or experiences might include:

type of certification pathway, undergraduate and graduate educational experiences, teaching environment, relatives who were teachers, and personal high school experience.

Phase 1 is a concurrent quantitative/qualitative study that utilizes the “Teacher Sense of Efficacy Scale” (TSES) created and tested by Tschannen-Moran and Woolfolk Hoy (2001), which is based on an unpublished instrument created by Albert Bandura (1998). The survey also includes a qualitative set of short-answer questions designed by this researcher to collect information addressing demographic data and personal experiences. This instrument was utilized as an online survey that was sent to high school science induction teachers in the state of Missouri. Phase 2 is a basic qualitative study (Merriam, 2009) using telephone interviews and a focus group with Missouri induction high school science teachers who are either traditionally certified or alternatively certified. The alternative certified teachers were used as one group and further subdivided into three groups: alternative through a college or university, ABCTE, and other (doctoral, provisional, etc.), and the traditionally certified formed the second major group. The function of Phase 2 was to expand and enrich the researcher’s understanding of the participants’ responses concerning perceived self-efficacy and provided the opportunity for the researcher to ask clarifying questions to delve into a more comprehensive understanding of the perceived personal teaching efficacy of the participants and learn what has influenced this understanding.

Phase 1 Quantitative/Qualitative

Sample/Participants. The criterion sample for Phase 1 was taken from the population of high school science teachers currently practicing in the State of Missouri and consisted of all induction high school science teachers; those teachers in their first 5 years of practice. Access to their email addresses was obtained from the Department of Elementary and Secondary Education’s (DESE) core data base, which is in the public domain. Limiting

the participants to only high school science induction teachers rather than all induction teachers in Missouri makes this a criterion sample (Merriam, 2009).

Design. The researcher contacted the Core Data section at DESE to obtain a research sample consisting of all induction high school science teachers in Missouri schools. After receiving IRB approval the selected sample was sent an email containing a brief description of the research (see Appendix F). Those who did not have an email listed were mailed the information with the links to their school address. Both ask them to complete an embedded online survey by following the included link, and they were also asked if they were willing to be interviewed via the telephone or in a focus group. Those few who replied in the affirmative to the interview were contacted by phone or email depending on their choice. By having these two requests in the same initial contact email/ letter the contents of the online survey remained separate and anonymous. The survey contains: an informed consent form and overview of the project (see Appendix G), the efficacy test instrument and a questionnaire (see Appendix H) aimed at obtaining demographic and personal experience information.

The overview of the project explains that their participation is voluntary and their identities for the online survey generated using Survey Monkey will be anonymous and even though they will be connected to the qualitative data collected during the focus group interview (Phase 2) that information will be kept confidential and pseudonyms will be used. The consent form states that returning the completed survey constitutes them giving consent for their information to be used in the study and that each survey will be downloaded and coded upon receipt; thereby removing the connection to the email addresses and keeping the information anonymous. The efficacy instrument was analyzed using the scoring guide developed by Woolfolk and Hoy (2010) (see Appendix I). The short answer portion of the

survey was analyzed using Nvivo-10 (an online program that allows researcher to make nodes/categories and add response from respondents) and a code book developed using the respondents' responses (see Appendix J).

Those who agreed to participate in the focus group and phone interview portion (Phase 2) were assigned a pseudonym and any geographic data that could be used to identify the respondents were altered. To aid in the developing of the questionnaire the researcher ran a small pilot study with teachers in a local high school and ask them for feedback on the wording of the questions. Only 14 teachers agreed to participate and none had any suggestions for editing the questions included in the survey.

Instruments. The self-efficacy scale was chosen for this study based on the analysis (Chapter 2) of several scales that are currently in use; both have origins in Bandura's social cognitive theory and contain items from his unpublished instrument (Tschannen-Moran & Woolfolk Hoy, 1998, 2001, 2010) (see Appendix H). When this scale was presented to the participants it was labeled as "Personal Appraisal Inventory" instead of using the words self-efficacy to encourage honesty in the participants' responses (Bandura, 2006). The more nondescript label of "inventory" sometimes aids the participants in more open disclosure of their true thoughts. The 24 questions on the instrument have been determined to access three factors: Efficacy in student engagement (Items 1, 2, 4, 6, 9, 12, 14, 22), efficacy in instructional strategies (Items 7, 10, 11, 17, 18, 20, 23, 24) and efficacy in classroom management (Items 3, 5, 8, 13, 15, 16, 19, 21) (see Appendix K Items by Subscale). The instrument was scored using a Likert scale (1 = nothing, 3 = very little, 5 = some influence, 7 = quite a bit, and 9 = a great deal) (Tschannen-Moran & Woolfolk Hoy, 2010). This scale measures personal teaching efficacy using the three sub groups.

The short answer questions that are included provide information on the type of certification each respondent holds and where they obtained their teaching certification, their certification areas, what they are actually teaching, level of post high school education, and other demographic data about their teaching history as well as the high school they attended. This information provides factor classifying data to correlate to the teachers' personal teaching efficacy in the areas of student engagement, instructional strategies, and classroom management. Those who are teaching in a high school setting similar to their own experience may have an easier transition from student to teacher due to familiarity with the environment where as those who are teaching in a school setting that is different in size and location (urban, rural, or suburban) for their high school experience may experience a more difficult transition period. One question asks if they have teachers in their family and what they learned about the profession of teaching from those relatives. These answers provide some insights when analyzing the respondents' answers to questions about their perceptions of teaching as a career. This could have some bearing on their personal teaching efficacy in relation to preconceived ideas about what it means to be a teacher since everyone has experienced the classroom from the perspective of a student (Britzman, 2003). To better understand the respondents' experiences while preparing for certification one question asks about their encounters with the modeling of a variety of teaching techniques; other questions address classroom management strategies and how they see their role in student success in their classroom (Darling-Hammond & Bransford, 2005). The survey concludes with questions about their feelings on teaching as a career, their perceptions of their own effectiveness, what factors (including their mentoring experience, their administration, and their teaching environment) were most influential on their outlook on education as a career choice, and if they are returning to the classroom in the fall (retention). This line of

questioning provides information on teacher retention that is not addressed in the teacher belief instrument and provides a method for determining what classification factors most affect teacher personal teaching efficacy and retention rates.

Attrition. This criterion sample was obtained from the data base for the entire state of Missouri which indicated there were around 750 high school science teachers with 5 years or less teaching experience (induction teachers) in Missouri public schools in 2012 (DESE, 2012). An expected response rate of 20% needed at least 149 out of the 745 induction teachers to respond. Attrition was not an issue, but getting the minimum 20% response rate did present problems. Resending the survey two times and counting those who opted out after beginning the survey provided the 20% response rate desired. Those participants on the provided list who did not have emails were sent a letter to their school addresses that included the link to the online survey developed using Survey Monkey (<http://www.surveymonkey.com>), my email, and a request for them to send an email to me if they were willing to be interviewed (see Appendix L). They were asked to go to that link and complete the survey.

To help ensure a high response rate those who completed the survey were given the opportunity to be entered into a drawing for an online \$50.00 gift card through Survey Monkey. Since Survey Monkey electronically selects and notifies the recipients the anonymity of the participants' responses was maintained. Each question on the survey was marked as "must be completed" so only those who actually complete each question will reach the end and have the opportunity to win the gift card. A statement in the email/letter and introduction to the survey contains information about the chance to win the gift card. The survey was available for 15 days before the winners were chosen by Survey Monkey, one for the email respondents and one for those who responded to the mailed letter.

Limitations. Since the list of participants was obtained from the Core Data of Department of Elementary and Secondary Education (DESE) there is no direct access to the respondents on an individual basis. The original data base did provide access to the participant's name, school, school address and email addresses but access to that connection was removed to protect the identity of the respondents and the researcher has no way to determine who did or did not participate. The fact that the respondents did a self-report also allows for personal self-bias to affect how they respond to questions about their own effectiveness and abilities in the classroom. The self-report system also allows for a bias that is directly related to the contents of the survey based on who actually returns the completed survey (Fowler, 2009, p. 176). The time frame for administering the survey was also a limiting factor for this research. In order to obtain the highest possible response rate, the survey needed to be sent out close to the end or beginning of a school year. This survey was sent out in the fall and those induction teachers not returning may not have received the initial questionnaire, perhaps some of the 44 online surveys that bounced fit in this category.

The small sample size also posed some limitations on the analysis of the data in the area of certification types and years of experience. Out of the 38 respondents who were alternatively certified the researcher had to group four respondents into a group labeled “other” and there were only nine respondents out of 94 who had 2 years of teaching experience. These small sample sizes can sometimes bias the outcomes during analysis.

Quantitative Data collection and analysis. The TSES Instrument used for the self-efficacy portion of the online survey has well established reliability and validity evidence (Chapter 2) and provided scoring guides (see Appendix I). The three factors addressed by the Teacher Self-Efficacy survey are: (1) efficacy in student engagement (Items: 1, 2, 4, 6, 9, 12, 14, 22), efficacy in instructional strategies (Items: 7, 10, 11, 17, 18, 20, 23, 24) and efficacy

in classroom management (Items: 3, 5, 8, 13, 15, 16, 19, 21) (Tschannen-Moran & Woolfolk Hoy, 1998). The total score for each factor provides the efficacy score for that specific factor and the average of all three provides the overall personal teaching efficacy score (see Appendix K Items by Subscale). Frequency distributions for the overall personal teaching efficacy scores and the mean scores for the three sub groups: student engagement, instructional strategies, and classroom management allowed the researcher to determine if there was a normal distribution of data (Mendenhall, Sincich, 2003). Since the sample for this research was rather small ($n = 94$) Fowler's (1988) Sample Size Table indicates that 95% of the time the sample mean will have an equal chance of differentiating between the factors with a 10% error (90 % of the time).

Pearson's correlation coefficient was run to determine the correlation between the size of school the teacher attended and the size of the school where they currently teach to help determine what factors influenced their decision to become a teacher and their personal teaching efficacy (Norušis, 2008). Analysis of variances were used to determine the relationship between classification traits (IVs) and teacher personal teaching efficacy (DV) that best explain the respondents' personal teaching efficacy scores on the TSES with a $p = .05$ level of significance. The Levene's test for homogeneity of variances ($\alpha = 0.05$) was run to determine if the assumption of equal variances was met. If there were equal variances then the Tukey's Honestly Significant Difference (HSD) test was run to determine significant pair wise comparisons. If the equal variance assumption was violated using the Levene's test then the Welch and Brown-Forsythe robust test of equality of means ($\alpha = 0.05$) were run ("Understanding the One-Way", 2013). The Tukey (HSD) test when the assumption of homogeneity of variance was met or the Games-Howell test when the homogeneity of variance was violated helped to determine which factors had the most influence. One purpose

of this analysis was to determine any significant relationships between personal teaching efficacy of induction high school science teachers and certification pathways and determine if those with a traditional teaching certification have higher personal teaching efficacy. A second purpose was to examine if one's years of experience was related to a higher personal teaching efficacy.

The third research question centers on the idea that personal teaching efficacy is formed by the experiences and interactions that teachers encounter (Bandura, 1995) and then in turn produce effects on how a person thinks, feels, acts and motivates themselves toward success. These processes (cognitive, motivational, affective, and selective) usually "operate in concert" (Bandura, 1997, p. 116) to produce those effects. This question is addressed in Phase 2 (qualitative) and examines how life experiences, certification training and the school location (rural, urban, suburban) and size impacted the respondents' personal teaching efficacy which in turn influenced the teachers' actions.

Phase 2 Qualitative

Sample/Respondents. This criterion sample consists of induction science teachers in the state of Missouri who responded to the initial email and agreed to participate in the interview portion of the research along with those recruited through university student teacher supervisors. The original goal of the researcher was to have sufficient alternatively certified teachers from each of the possible certification pathways to have subgroups: ABCTE, Troops to Teachers, Teach for America, and alternatively certified through a college or university, with a minimum of four participants in each group. There were not four respondents from each of the subgroups willing to participate in Phase 2. The six who did respond were divided equally between alternative and traditional certifications.

Description of Respondents

Joe (Phone interview). Joe is an alternatively certified through a university, first year science teacher in a rural high school near Lake of the Ozarks in Missouri. Before switching to education Joe worked in the business world for 25 years. He currently teaches five sections of high school Biology and one section of high school Zoology (a semester course). Joe has a Masters in Animal Science and is currently working on completing a Master's in Education at the University of Missouri-St. Louis. He needs to complete his capstone research class. Joe had to pick up a few undergraduate classes in Biology to meet the DESE certification requirements. He did a full semester of student teaching in a large suburban district within a 30 mile radius of the university (see Appendix M).

Sue (Phone interview and survey respondent). Sue is traditionally certified through a college in Illinois and has been teaching for two years in a small rural Missouri town south of Highway 44. Sue left a "lucrative career as an interior designer for Ethan Allen" when her son was born and worked at Target so she could be a stay-at-home mom. When her son was "raised" she went back to college while working as an instructional assistant in a middle school. When she returned to college Sue already had an associate degree so she went evenings year round for two years to complete her certification. She has a degree in Algebra but also has a certification to teach science. The past two years she has been teaching three grade levels (6, 7, & 8) in two content areas (math & science). Sue resigned her position at the end of this school year rather than being terminated. She has been searching for a new position and a large portion of her interview focuses on her reaction to that resignation and sequential unsuccessful job search (see Appendix M).

Mary (Focus group). Mary is an alternatively certified, fourth year teacher in a local urban middle school who currently teaches seventh grade science. Her undergraduate major was anthropology; she became pregnant and realized that traveling around the world

probably wasn't the career choice that suited mothering. She earned her teaching degree through UMSL in the early 2000s where she did level one, two and three plus the seminar but did not student teach. Mary did not graduate from high school and did not provide the method she used to enter the university in lieu of a high school diploma (see Appendix M).

Emma (Focus group). Emma is currently doing her student teaching at a suburban high school within a 10 mile radius of the university and will be traditionally certified in science this spring (2012). She was chosen for this group on the recommendation of her supervising teacher due to the fact that her cooperating teacher left her in charge after day one and rarely makes an appearance. She is a student teacher going through year one teacher experiences. Emma is currently completing the requirements for a Unified Science teaching certificate with a Biology endorsement. Her undergraduate focus was Zoology and she was working at a tiger sanctuary until that fell through. In job searching she could find no other positions working with animals and realized she liked the education side of her previous job and decided to go for the unified teaching certificate because "I don't know that I want to be stuck to one thing forever" (see Appendix M).

Caden (Focus group and survey respondent). Caden is an alternatively certified through a university, first year teacher in a suburban high school within a 30 mile radius of the university, teaching Chemistry and Physical Science. Caden's first career path was toward research science and a PhD in biology but found he enjoyed teaching others about what he did more than actually doing the research. He went through the SMART Program at University of Missouri—Columbia where he earned a Master's in Education along with his alternative certification in Biology. Caden did his yearlong student teaching in the same high school where he is currently teaching and is planning on taking the PRAXIS for Chemistry this summer (2012) (see Appendix M).

Ellie (Focus group and survey respondent). Ellie is a traditionally certified teacher who is also in her first year of teaching at the same local suburban high school as Caden. She teaches Physical Science and Astronomy/ Meteorology even though her undergraduate major and certification area is Biology. Ellie has always wanted to teach but was not sure about what content area until she began taking science courses for her undergraduate degree. She also plans on taking the PRAXIS this summer (2012) in Physical Science (see Appendix M).

Design. Phase 2 is organized as a basic qualitative study (Merriam,2009) using the semi-structured interview format (Merriam, 2009) to provide a flexible environment with a set of guiding questions that can be answered in any order as chosen by the participant. The initial questions were developed based on the responses given to the short answer questions in the original survey to clarify and explore the categories that emerged during Phase 1. The purpose of the interviews was to broaden the understanding of the participants' perceptions of their personal teaching efficacy and answer the third research question: According to teachers themselves, what combination of characteristics or experiences best explain the personal teaching efficacy of Missouri induction high school science teachers?

The third question centers on the idea that personal teaching efficacy is formed by the experiences and interactions that teachers encounter (Bandura, 1995) and then in turn produce effects on how a person thinks, feels, acts and motivates themselves toward success. This question examines how life experiences, certification training and the school location (rural, urban, suburban) and size impacted the respondents' personal teaching efficacy which in turn influenced the teachers' actions are viewed from the teachers/participants perspective. Teachers with a high sense of personal teaching efficacy likely set high personal goals and remain focused regardless of the circumstances, according to the attribution theory (Alden, 1986). They will maintain a high level of motivation and attribute their failures to their own

lack of effort or to situations beyond their control rather than believing they have low abilities. People who believe they can exercise control over these situations, those with a high sense of efficacy, view the adverse situations as challenges rather than threats (Jerusalem & Mittag, 1995). Bandura states (1995) that people who believe they can manage stresses do. He also says that people with a high self of self-efficacy will approach difficult tasks as “challenges to be mastered” (Bandura, 1995, p. 11). Analysis of the comments made by the participants allowed the researcher to closely examine participants’ perceptions of their own personal teaching efficacy. Those with high personal teaching efficacy may see challenging classes, low-achieving students, and difficult circumstances as challenges to be met and conquered, while those with low personal teaching efficacy may see these same situations as indicators of their own failures and deficiencies. According to prior research, those with a low perceived personal teaching efficacy will be tempted to give up and see themselves and their lack of ability as the cause of the failure, while those with high perceived personal teaching efficacy will be motivated to complete the task and meet their personal goals.

Since the researcher did not know the specific answers provided by these participants in Phase 1, some questions are similar to those in the original instrument. The questions deal with the following areas:

1. Their experiences in the classroom concerning teaching strategies.
2. Their perceptions/feelings about their ability as a classroom teacher in the area of classroom management, student engagement, and teaching strategies.
3. The preparation they received while obtaining their teaching certificate:
was it adequate, were there holes in their preparation, what would they change about their experience.

Preparation for Interviewing. Since the researcher had a limited knowledge base on interviewing new teachers Dr. Sam Smith (pseudonym), Deputy Superintendent and Mrs. Jill Jones (pseudonym), Principal from a school district within a 50 mile radius of the university, were interviewed to help the researcher understand what to ask and observe during the interview sessions (see Table 5).

Table 5: Questions to ask evaluators of induction teachers

<p>What characteristic or traits do you look for when you observe new teachers?</p> <p>How do you know if an induction teacher has the potential to become an effective teacher?</p> <p>Do you use the same form for tenured and induction teachers?</p> <p>How do you know when a new teacher has the potential? What key traits do you look for?</p> <p>Phrases or comments they make? Body language?</p>

Once the questions were developed, they were transcribed and used for both the focus group and the telephone interviews (see Appendix N).

Qualitative Data Collection. The focus group was conducted March 12, 2012 at a local university and moderated by Dr. C. Farrar since two of the participants work in the same school district as the researcher. Two of the four focus group participants were recruited from the initial online survey and a professor who teaches science methods at the researcher's University recruited the final two participants. The group began at 4:30 P.M. and lasted until 6:30 P.M. and had four participants. Snacks were provide for the participants since they were all coming directly from their respective high schools and each participant

was ask to complete a short exit question and given a “goody” bag that contained a gas card (\$10.00) and some teacher resources.

On April 3, 2012 the first interview with Joe (not his real name) was conducted over the phone and lasted from 3:42 P.M. until 4:22 P.M. Joe was contacted by a methods professor from the researcher’s university and given the researcher’s email address; he made the initial contact and agreed to a phone interview. Joe provided his address and a \$10.00 gas card was mailed to him for his participation. The final phone interview with Sue was conducted on June 1, 2012 and lasted from 2:00 P.M. until 2:40 P.M. Sue participated in the original online survey, provided her name and phone number in the comments section and invited the researcher to call her. Since participation in the original survey provided the opportunity to win a \$50.00 gift card through Survey Monkey no gas card was sent.

Limitations. To help control for the sensitivity and integrity of the investigator toward the participants as well as the ethics of the researcher, and a willingness to report all the findings; member checking (Merriam, 2009) was offered to the participants in both the phone interviews and focus group, no one was interested. A detailed research journal of all findings and observations was maintained by the researcher and vital statistics about participants’ names and places of employment were disguised in order to keep the participants anonymous to all readers. Since these precautions were observed the researcher should be able to “create a vivid portrait” of the participant that can be more generalizable (Merriam, p.52). A high standard of personal ethics (Merriam, 2009) on the part of the researcher and repeated assurances that the information is anonymous eliminated any potential problems as well.

A second possible limitation was the researcher’s limited experience in interviewing and evaluating induction science teachers as potential staff members or on their performance

in the classroom. As noted above, the researcher worked with experienced professionals in developing the protocol for the semi-structured interview and framed the questions around the information obtained from the questions in Phase 1.

Qualitative Data Analysis. The goal of the qualitative data analysis was to have a rich descriptive account from the perspective of the participants. A log book and notes from the interviews and focus group was kept in order to establish construct validity of the research (Merriam, 2009) and a fellow researcher was asked to read and code at various intervals during the development of the final code book.

Initially, the data collected from the open-ended questions in the online survey were analyzed using open coding (Guest, Bunce, Johnson, 2006). This analysis occurred before any face-to-face meetings, and several broad themes emerged: people who influenced the participant, money, politics, class size and makeup, effectiveness, mentoring, how to manage the classroom, student success, strategies for teaching, opportunities to see modeling, and view of the career/job. Next, the focus group transcription was completed, and it was analyzed for these same themes; in this step, the idea of “teacher accountability for student learning” emerged. Immediately after the first phone interview in Phase 2, the interview was transcribed and initial ideas were again identified using open coding as well as the initial codes listed above (found in the online survey questions and focus group). In this step of data analysis, the theme of “better training during certification process” was added. The second interview was conducted and analyzed but no new themes emerged. (This interview was more of venting session for the participant rather than an interview that provided answers to the questions that were asked.) After the researcher read and coded all of the transcribed dialog the major themes were: people who influenced the participant, view of teaching as a career/job, how to manage the classroom, strategies for teaching, effectiveness as a teacher,

experience, class size and makeup, mentoring, support, money, politics, opportunities to see modeling, teacher accountability for student learning and better training during certification process. These were condensed into four core categories: Education as a career, classroom management, student success, and opportunities to see modeling. Experience, view of teaching as a career/job, politics, money, and part of the comments from better training during the certification process and people who influenced the participant became education as a career. Politics and money were absorbed into mindset during this synthesis. How to manage the classroom was the second category made up of class size and makeup, how to manage the classroom, and some of the comments for strategies for teaching. The third category became student success and was made up of teacher accountability for student learning, effectiveness as a teacher, support and some of the comments that were originally coded under people who influenced the participant. The fourth category became opportunities to see modeling and was made up of modeling and some of the strategies for teaching. All four of these categories can be linked under the overarching theme of personal teaching efficacy.

All of the transcribed documents were then entered into the Nvivo-10 program and that program was used to better organize the comments into the categories and sub categories and create dimensions for each sub-category. During the synthesis of the data using Nvivo-10 a research team member provided input and feedback on the subcategories and dimensions to help maintain the audit trail (Yin, 2009). The final code book contains the categories, sub-categories, dimensions and a representative quote for each dimension and was used for the qualitative portion of the research (see Appendix J).

Researcher Bias and Assumptions. The personal background of the researcher as an experienced teacher, department chair and curriculum coordinator could pose some bias

issues. As an experienced high school science teacher the researcher has developed a set of personal expectations and may have a tendency to assign these same expectations to the induction teachers. The researcher uses a student centered approach and sees her role as the facilitator not the dispenser. The interviews with Dr. Smith and Mrs. Jones helped to provide an entry level understanding of expectations for the researcher and help to minimize this bias. This same foundation of experienced teacher, department chair and curriculum coordinator could also provide some advantages to the researcher. As a department chair I am responsible to mentor new teachers, make observations in all the science classrooms and provide positive feedback to an entire department. As the district curriculum coordinator I visit all five high schools and interact with more than 60 science teachers with different levels of experience and a diversity of teaching styles. These interactions provide me with a more universal understanding of various teaching styles and multiple approaches that are effective with students.

Summary

This research used a pre-established research instrument in Phase 1 to measure teacher personal teaching efficacy along with short answer questions that delved into the demographic information and qualitative life experiences/perspectives of the respondents. Phase 2 included a focus group and phone interviews to help add depth to the understanding of teacher personal teaching efficacy when comparing alternative and traditionally certified induction high school science teachers in the state of Missouri. As demonstrated in the following chapters, findings from these two phases were correlated and compared with the current research on teacher personal teaching efficacy and the findings of Tschannen-Moran & Woolfolk Hoy (2001).

Chapter 4

Analysis

The purpose of this study was to determine the relationship between personal teaching efficacy and certification pathway (alternative and traditional) of induction high school science teachers and what relationship years of experience has on personal teaching efficacy. The online survey (Survey Monkey) that was used to collect these data contained the self-efficacy instrument (Tschannen-Moran & Woolfolk Hoy, 2001) known as “Teacher Beliefs” and selected short-answer questions to determine demographic information and more in-depth information on the respondents’ viewpoints on the factors classroom management, student engagement, and instructional strategies (see Appendix H). A focus group and telephone interviews were also conducted to further explore teacher self-efficacy in the areas of classroom management, student engagement, and instructional strategies.

Since this research was focused on induction (teachers in their first 5 years of experience) and personal teaching efficacy, those teachers (34) who had less than 5 years in Missouri but overall more than 5 years of teaching experience were excluded from the statistics leaving a respondent pool of 91 induction high school science teachers from Missouri. The analysis of data found statistical significance between years of teaching and (1) overall mean for personal teaching efficacy, (2) the subgroup student engagement, and (3) the subgroup instructional strategies. Statistically significance differences were also found between the opportunities to observe modeling and (1) the overall mean scores of personal teaching efficacy and (2) pathways to certification. No other statistically significant differences were found. These quantitative findings were further supported by the relationships uncovered in the qualitative data which supported the importance of years of teaching experience and opportunities to observe modeling on personal teaching efficacy.

The findings are presented beginning with (a) the source of respondents for online survey, (b) descriptive analysis of the respondents from online survey, (c) analysis of variance from online survey data, (d) description of interview and focus group respondents, (e) analysis of responses from interviews and focus group and (f) summary of the findings.

Survey Data

Source of Respondents. The population for this research study was obtained from the Department of Elementary and Secondary Education's Core Data and consists of all high school science induction teachers (Those teachers in their first five years of teaching). The initial list contained over 1000 names but upon close scrutiny it was determined that many of the teachers listed were from elementary or middle schools and had to be eliminated, reducing the total number of potential respondents to 745. The final sample of qualified respondents who submitted a survey was 126. A total of 745 requests (371 by email and 374 by U.S. Mail) were sent, 44 were returned or bounced, 26 opted out, one did not provide sufficient survey responses to both the self-efficacy instrument and the open response questions to be included in the data set, and 125 completed and submitted the survey. If the 44 that bounced or were undeliverable are subtracted from the total and the 26 who opted out are counted as respondents, the response rate was 21.5 % (151/701). Thirty-four were eliminated from the list because their overall teaching experience totaled more than 5 years even though they had been teaching less than five years in Missouri providing a response rate of 17%.

Descriptive Analysis of Respondents. Fifty-three respondents (58.2%) received their teaching certification following the traditional route through a university. Twenty-one respondents (23.0%) obtained an alternative certification through a higher educational institution. Thirteen respondents (14.3%) were American Board for Certification of Teacher

Excellence (ABCTE) certified, and the remaining four teachers (4.4%) followed a variety of alternative routes to certification; including doctoral degree, provisional and temporary certificates (see Table 6). This 58/41 ratio between traditional and alternative certification from the Gaither research aligns with the nation percentages 60/40 of traditional and alternative certification.

Table 6

Pathway to Certification (Five Years or Less Experience) (n = 91)

Pathway	Gaither Research		National
	Number	Percent	Percent
Traditional	53	(58.2)	(60)
Alternative	38	(41.8)	(40)
Through a University	21	(23.0)	
ABCTE	13	(14.3)	
Other	4	(4.4)	

Undergraduate major. Looking at the undergraduate majors for the 91 respondents shows that 27 (29.6%) received a Bachelor's in Education, 54 (59.3%) received a Bachelor's of Science and 10 (11.1%) have a degree in a non-science subject area (English, History, Psychology) (see Appendix O). All of those with an undergraduate major in Education followed the traditional route. The 59.3% who have an undergraduate major in science were almost equally divided between Traditional (25) and alternative (26). The 25 traditionally certified teachers with an undergraduate science major constitute 47.2% of the 53 teachers who hold a traditional certification and the 29 alternatively certified teachers with an undergraduate science major constitutes 77.6% of the 38 with an alternative certification.

Undergraduate grade point average. Seventy-nine (87%) of the respondents had undergraduate Grade Point Averages (GPA) above 3.0 and the remaining 13% (12) had a GPA between 2.1 and 3.0 with 11 (12%) of them being between 2.6 and 3.0. In the 87% who had a GPA above 3.0, one had over a 4.0, 42 had between a 3.6 and 4.0 and the remaining 36 had between a 3.1 and a 3.5 (see Appendix P).

Master's degree. Fifty (55.0%) currently hold a master's degree and 31 (62.0%) of those are in education. Of the remaining, 14 (28.0%) have a Master's degree in a science related field and five (10.0%) have a Master's in non-science fields (Divinity, Business, History) (see Appendix Q).

Where they teach compared to where they attended (Rural, Suburban, and Urban). The type of school (rural, suburban, urban) that each respondent currently teaches was compared to what type of high school they attended. Of the 91 respondents 43 (47.3%) currently teach in rural schools, 39 (42.8%) teach in suburban schools, and 9 (9.9%) teach in urban schools. Thirty (69.8%) of the 43 who teach in a rural school attended a rural high school, and 13 (30.2%) of those who teach in rural schools moved there from a different school type. Thirty-nine of the 91 currently teach in suburban schools. Thirty-one (79.5%) of the 39 who teach in suburban schools attended a suburban high school and eight (20.1%) moved there from a different school type. Nine (9.9%) of the 91 respondents currently teach in an urban school. Two (22.2%) attended an urban school. Seven (77.8%) of the nine who currently teach in urban high schools moved there from a different school type (see Appendix R).

Size of current high school and size of school attended. A comparison of the populations of school indicates that over half (55%) of the respondents current teach in schools with 1000 or less students, 25% teach in schools with a population between 1001 and

1500, and the remaining 20.0% teach in schools with a population over 1501. Fifty out of 91 of the respondents are teaching in schools with 1000 or less student population. Twenty-eight (30.8%) out of 91 currently teach in a school smaller than 500, 22 (24.2%) are in schools with populations between 501 and 1000, 23 (25.2%) are in schools with a population between 1001 and 1500, 10 (11.0%) are in schools between 1501 and 2000, five (5.5%) currently teach in schools with a population between 2001 and 2500, and three (3.3%) are in schools over 2500 (see Appendix S).

A Pearson Correlation Coefficient, $r_{\text{Current School Size-Size School Attended}} = .400$, $p = 0.01$ (2-tailed) for entire sample indicates a moderately low relationship between the size of the school where the respondent currently teaches to the size of the high school the respondent attended. When the Pearson Correlation coefficient, $r_{\text{Current School Size-Size School Attended}} = .407$, $p = 0.01$ (2-tailed) was determined for the respondents with five years or less experience a moderately low relationship was also found. This indicates that 16% ($r^2_{\text{Current School Size-Size School Attended}} = .400$) and 17% ($r^2_{\text{Current School Size-Size School Attended}} = .407$), respectfully, of the variance can be explained by similarities in size of school between respondents' personal high school experience and the school where they are currently teaching. The remaining 83% to 84% is influenced by other factors (see Appendix T).

Respondent's age. Based on the year the respondents graduated from high school and assuming an average graduation age of 18, 78% of the respondents are in their twenties (45.1%) or thirties (33.3%) and the remaining 23% are in their forties (11.0%) or fifties (9.8%). The age of one participant could not be determined from the data given (received a General Equivalency Diploma-GED) (see Appendix U).

Years of teaching Experience. Twenty-seven percent (34) of the original 125 respondents were eliminated from the analysis because they have more than 5 years of

teaching experience overall even though they have less than 5 years of teaching experience in a Missouri public school. Of the remaining 91 respondents 17 (13.6%) have one year of experience, nine (7.2%) have two years of experience, 19 (15.2%) have three years of experience, 24 (17.6) have four years of experience, and 24 (19.2) have five years of experience (see Appendix V).

Phase I Quantitative Analysis

Initially the frequency of means for overall personal teaching efficacy scores, and for each of the three subgroups: student engagement, instructional strategist, and classroom management were calculated to determine the distribution for each. Each distribution of mean was found to be in acceptable parameters for a normal distribution curve.

Descriptive Analysis of Data.

Overall Scores TSES. The range of scores is from zero to 216 with a mean score of 168.76 and a standard deviation of 19.51 ($n = 91$). Data are constrained due to the parameters of the testing instrument. Top value for any one response is nine and the maximum possible obtainable points are 216. The histogram (Figure 1) of overall scores shows a symmetric distribution of scores, with 66 (72.5%) of the respondents within one standard deviation of the mean (168.76 ± 19.51). Fourteen (15.4%) are more than one standard deviation above the mean and 11 (12.1%) are more than one standard deviation below the mean. Ninety-five percent or more of respondents are within two standard deviations of the mean (168.76 ± 39.02).

One respondent gave themselves a perfect score and there is one outlier on the low end (93 out of a possible 216). Two of the 91 respondents' total score was over 200 on a scale of 216 and five of the respondents gave themselves a score of nine for one or more of the three subscales. Since the respondents had no way to know which questions went with the

individual subscales this was a fair representation of their view of their own personal teaching efficacy (see Table 7).

Table 7

Percent Distribution of Overall Scores

Point Range	#	(Percent)
120 or Lower	2	(2.2)
121-130	1	(1.1)
131-140	3	(3.3)
141-150	7	(7.7)
151-160	14	(15.4)
161-170	20	(22.0)
171-180	20	(22.0)
181-190	10	(11.0)
191-200	12	(13.1)
200-216*	2	(2.2)

Forty-six (50.5%) of the 91 respondents scored themselves over 168 (Mean) out of the possible 216 total points. Twenty-five of the 46 are traditionally certified and 21 hold an alternative certification. Six of the 46 are in their first year of teaching, two in their second year, 12 in their third year, 12 in their fourth year, and 15 in their fifth year. The lowest scoring respondent (93) is a traditionally certified teacher with four years of experience, Bachelor's in Biology and a Master's in Education. The respondent who scored themselves a perfect 216 is a traditionally certified teacher with five years of experience, Bachelor's in Education with a Biology emphasis, a Master's in special education, a specialist or doctoral degree, and a GED instead of a high school diploma.

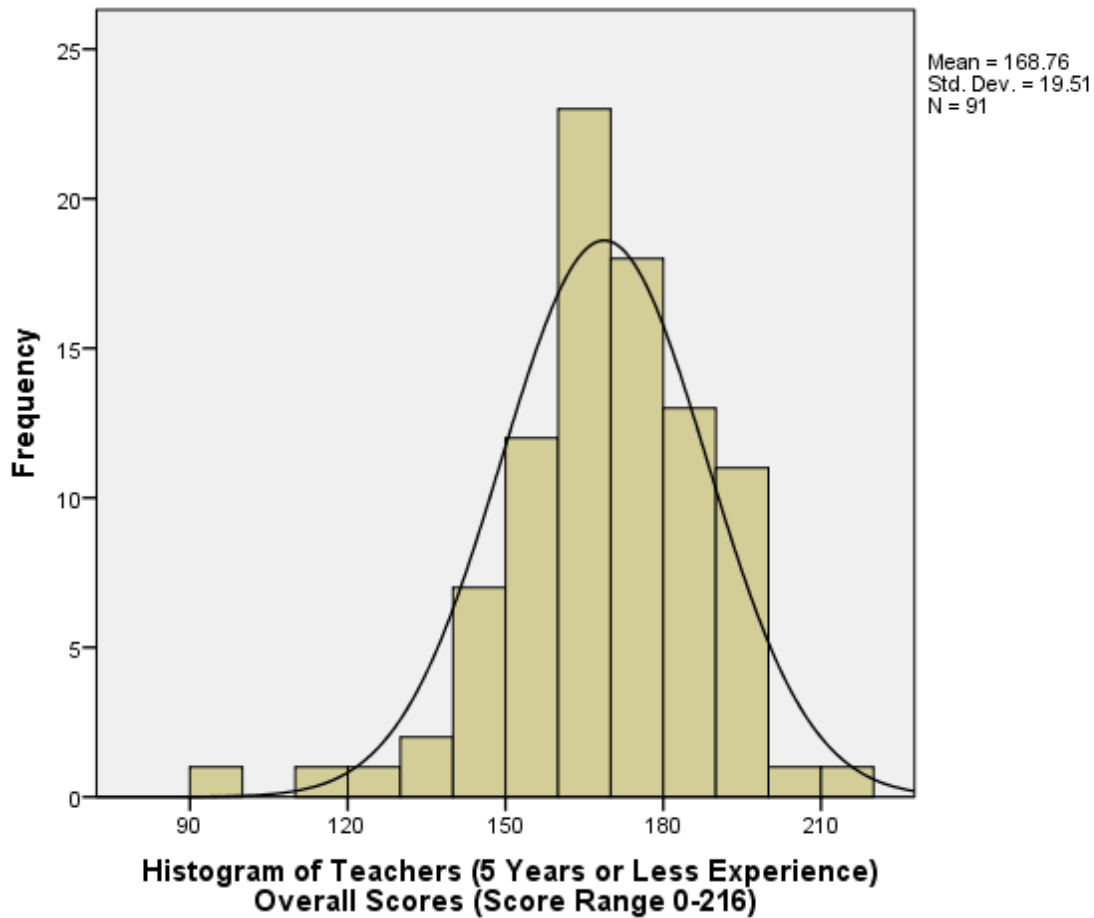


Figure 1. Histogram of Overall Scores on Teacher Self Efficacy Survey showing symmetrical distribution with one outlier. The histogram for the overall mean scores (0-9) is found in Appendix W.

Student Engagement Scores. The histogram (Figure 2) shows a symmetrical distribution of self-efficacy scores for the subcategory of student engagement with 93.4% of the scores falling within two standard deviations of the mean (6.58 ± 1.806) and 69.2% falling within one standard deviation ($6.58 \pm .903$). The range of scores is from zero to nine with a mean of 6.58 and a standard deviation of .903 ($n = 91$). The data set is constrained due to the parameters of the testing instrument; the top value allowed is nine and respondents self-report. Thirty-eight (58.2%) of the respondents scored themselves above the mean, 21 of

these have traditional certification and 17 have alternative certification., these respondents make up 40% (traditional) and 45% (alternative) of their respective certification pathways.

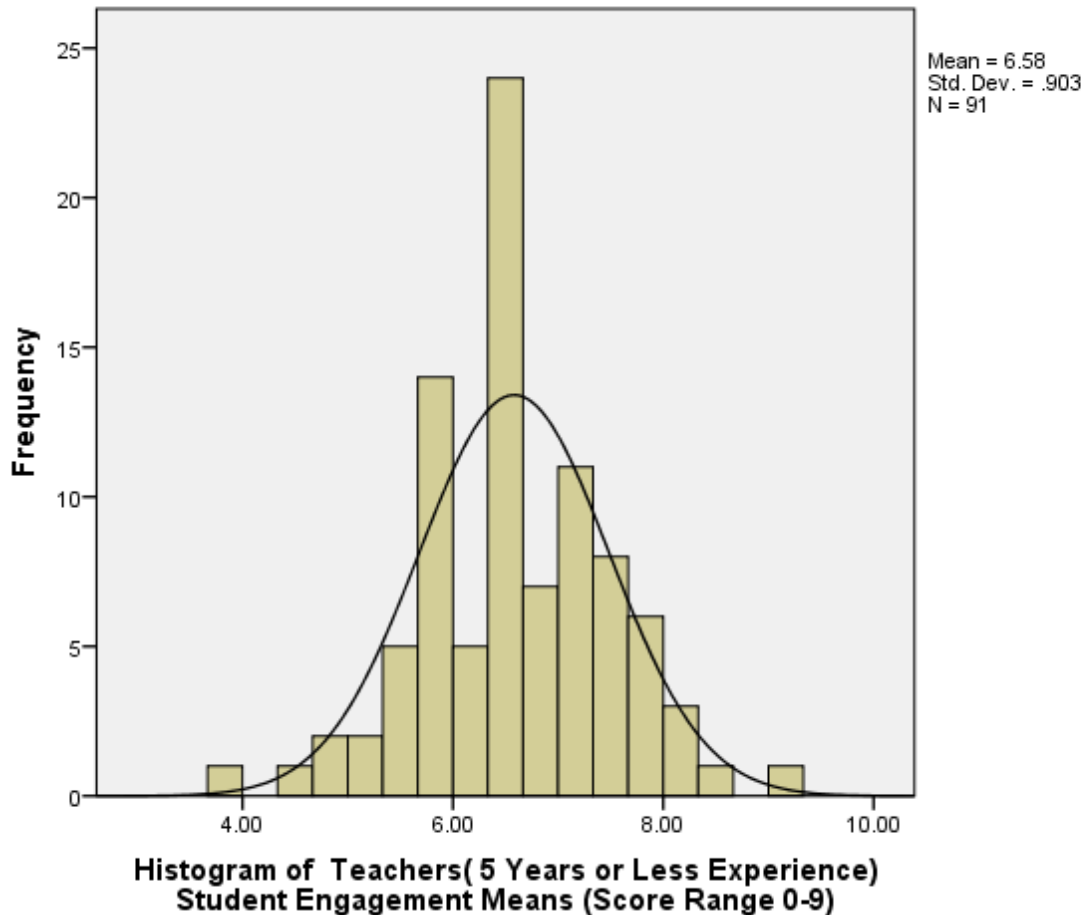


Figure 2 Histogram of TSES scores for the Subcategory Student Engagement Showing Normal Distribution

Instructional Strategies Scores. The histogram (Figure 3) of normal distribution curve for the subcategory Instructional strategies shows ninety-six percent (87) of the scores fall within two standard deviations of the mean (7.19 ± 1.866). The four remaining scores all fall more than two SDs below the mean. Three of the four have traditional certification and the remaining one has alternative certification through a university, half have a Master's in Education. One is a first year teacher and the other three have two, three and four years'

experience. Seventy-one (78%) of the scores fall within one SD of the mean ($7.19 \pm .933$), with a range of one to nine, a mean score of 7.19 and a standard deviation of .933 ($n = 91$). The data set is constrained by the finite values (one to nine) imposed by the testing instrument.

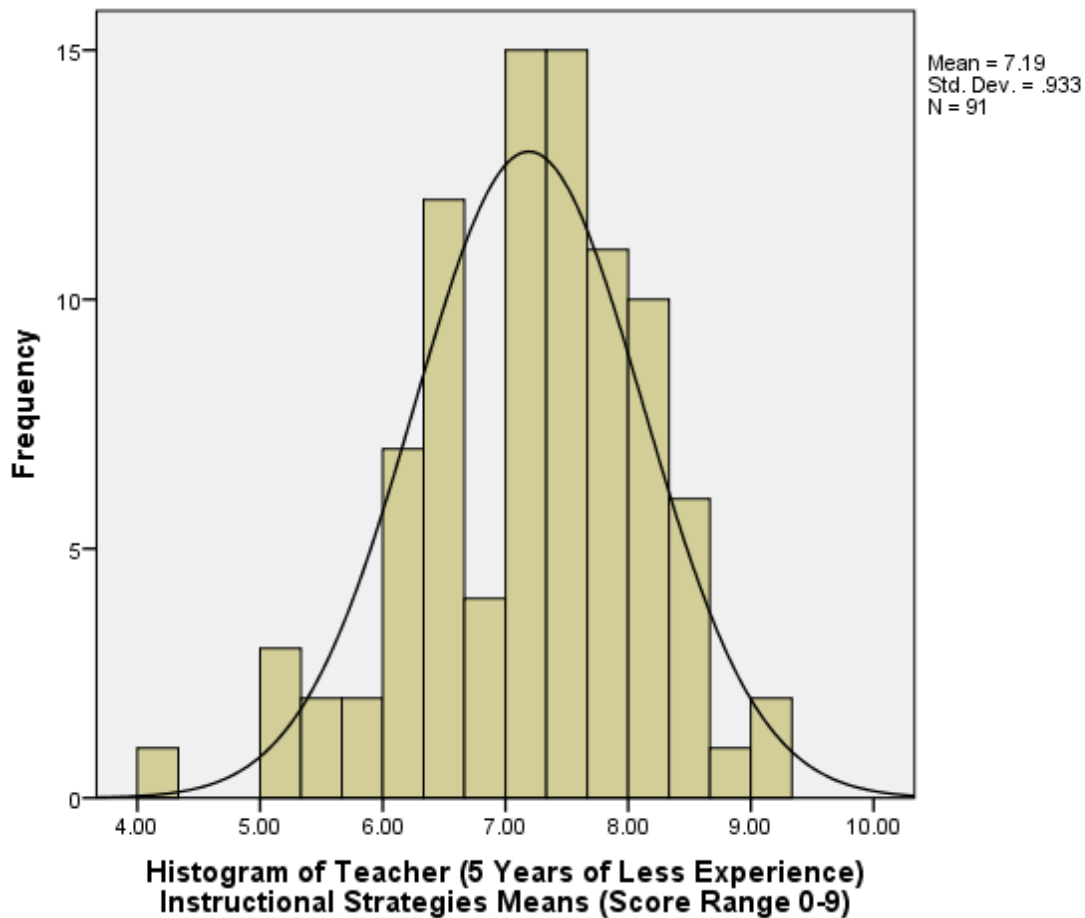


Figure 3 Histogram of TSES Scores for the Subcategory Instructional Strategies showing a normal distribution with four scores falling more than two SD below the mean.

Classroom Management Scores. The histogram (Figure 4) for the subcategory classroom management shows symmetrical distribution with 97% of the scores within 2SD of the mean (7.34 ± 1.914) with a range of one to nine, a mean of 7.34, and a standard deviation of .957 ($n = 91$). Data are constrained toward the high end (nine) of the scale due to

the values imposed by the testing instrument. Only three of the respondents fall outside this range and all are below the mean. Two are traditionally certified and one is alternatively certified through a university. In the scores falling more than one SD outside the mean the data show that 31 (34%) of the respondents are in this category. Of those 31, 16 (18%) respondents fall below the mean and consist of eight traditionally certified teachers, three ABCTE certified teachers and four alternatively certified through a university. The 15 (16%) who scored themselves higher than one SD from the mean consist of seven traditionally certified teachers, three ABCTE certified teachers, five alternatively certified through a university.

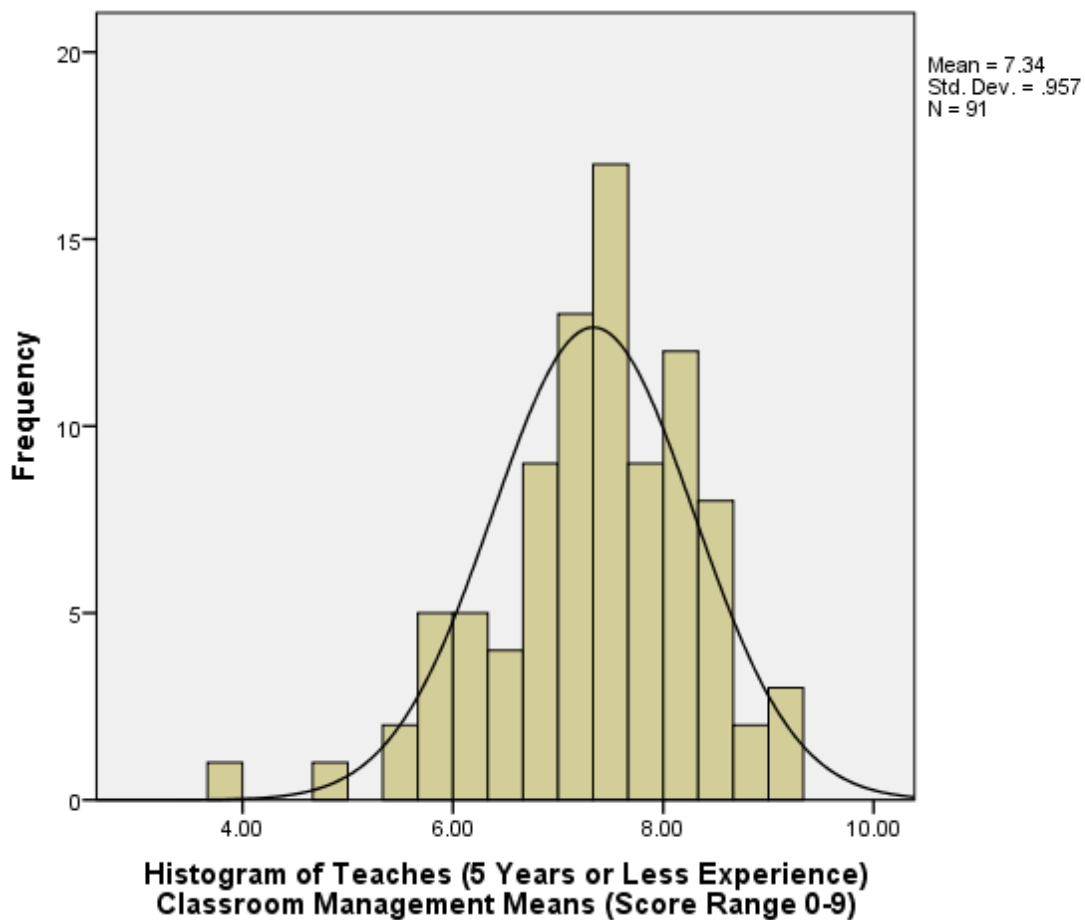


Figure 4 Histogram of TSES Scores for Subcategory Classroom Management showing a symmetrical distribution with an outlier on the low end of the graph

Hypothesis I findings from analyses of variance. To determine if there were any statistically significant connections between pathway to certification and an induction teacher's perception of personal teaching efficacy multiple ANOVAs were run on the sample. Then Levene's test for homogeneity of variances and Brown-Forsythe test for equality of means were run to determine which post hoc test comparisons to run; in turn, based on the homogeneity of variances, either a Tukey or Games-Howell post hoc comparison was run. The certification pathway was compared to the overall personal teaching efficacy and to the self-efficacy in each of the three sub groups: instructional strategies, student engagement, and classroom management. **No statistically significant differences were found for hypothesis I.** Induction teachers who have a traditional teaching certificate *did not have* a higher mean score on personal teaching efficacy as measured by the Teacher Self-efficacy Scale (Tschannen-Moran & Woolfolk Hoy, 2001) in comparison to alternatively certified teachers. **Statistically significant differences were found for sub hypothesis I.** Induction teachers with a traditional teaching certificate (IV) *do have* more opportunities to observe modeling ($1.74 \pm .788$) of teaching strategies and management techniques during the certification process than alternatively certified teachers. A relationship between opportunities to see modeling (IV) and the sub category classroom management (DV) was also found. Those teachers who have no opportunities to observe modeling ($7.34 \pm .957$) have higher classroom management efficacy than those who observe few or some modeling.

Opportunities to see modeling. Opportunities to observe modeling was compared to certification pathway, to overall mean scores on the TSES, and to the three subgroups on the

TSES: instruction strategies, student engagement, and classroom management. **A statically significant difference was found between certification pathway and opportunities to observe modeling and between opportunities to observe modeling and the subcategory classroom management.**

Pathway to Certification. The one-way ANOVA, $F(3, 87) = 7.279$, $p < 0.01$, demonstrated statistically significant differences between the pathways to certification (IV) and opportunities to observe modeling (DV) (see Table 8). The critical $F_{(3, 87)}$ value at the 0.01 level with three degrees of freedom is 2.35 therefore the probability that the differences in the sample means would have occurred by chance is less than 1%. The classifications for opportunities to observe teaching techniques modeled while in their certification program were: “none”, “few”, “some” and “many”. Analysis of the responses show 14 (15%) said “none”, 29 (32%) responded “few”, 39 (43%) responded “some” and 9 (10%) responded “many”.

Table 8
ANOVA Certification Pathway and Opportunities to see Modeling ($n = 91$)

	SS	df	M ²	F	Sig.
Between Groups (Combined)	13.102	3	4.367	7.279	.000
Within Groups	52.195	87	.600		
Total	65.297	90			

Post hoc test—Games-Howell. The Levene Test of Homogeneity of Variances shows $F_{(3, 87)} = 2.622$ with a $p = .056$ which is greater than $\alpha = 0.005$ indicated there is not a significant difference between the variables and the variances are equal. Post hoc comparisons using the Tukey HSD indicate that the pathway to certification had a significant impact on opportunities to see modeling at $p = 0.05$ (see Appendix X). Traditionally certified teachers had significantly more opportunities to observe modeling than the alternatively

certified teachers with the most significance being observed in the ABCTE ($p = 0.000$) certified teachers and teachers in the “Other” ($p = 0.000$) category (Teach for America teachers, doctoral route teachers and Career & Technical Education Teachers). However the difference between traditionally certified teachers and those teachers who followed the alternative route through a college or university was also significant ($p = 0.010$).

Further analysis of each category indicates that 84.6% of the teachers who followed the ABCTE pathway to certification reported “few” (61.5%) or “no” (23.1%) opportunities to observe modeling during the process, 15% reported “some” opportunities and 0% reported “many” (see Appendix Y). The analysis also indicates that 61.9% of the teachers who followed the alternatively certified through a university or college pathway reported “few” (38.1%) or “no” (23.8%) opportunities to observe modeling during their certification process, 28.6% who reported “some” and 9.5% who reported “many”. The four teachers who followed other pathways (doctoral, Teach for America) to certification had 50% who reported “no” opportunities to observe modeling during their certification process and 50% who reported “some”. Traditionally certified teachers had 32% who reported “few” (24.5%) or “no” (7.5%) opportunities to observe modeling and 68% who reported “some” (54.8%) or “many” (13.2%) opportunities to observe modeling during the certification process.

Traditionally certified teachers are more likely to have opportunities to observe modeling during their certification process than those teachers who followed alternative routes to certification (through a college or university, ABCTE, or other—career & technical education, Teach For America, ABCTE, Doctoral).

Classroom Management. The one-way ANOVA, $F(3, 87) = 2.997, p < 0.01$, demonstrated statistically significant differences between the subcategory classroom management (DV) and opportunities to observe modeling (see Table 9). The classifications

for opportunities to observe teaching techniques modeled while in your certification program were: “none”, “few”, “some”, and “many”. The critical $F_{(3, 87)}$ value at 0.01 levels with three degrees of freedom is 2.35 therefore the probability that the differences in the sample means would have occurred by chance is less than 1%.

Table 9

ANOVA Opportunities to See Modeling (Teachers with Five Years or Less Experience) and Sub group Classroom Management ($n=91$)

	SS	df	M^2	F	Sig.
Between Groups (Combined)	7.726	3	2.575	2.997	.035
Within Groups	74.757	87	.859		
Total	82.483	90			

Post hoc test Games-Howell. Since the Levene’s equality of variances was violated the Brown-Forsythe equality of means was run and found that $F_{(3, 59.196)} = 3.616, p < .005$ with $\alpha = 0.05$ is significant so the post hoc Games-Howell test was run. Comparisons using the Games-Howell test indicate that the mean difference in the self-efficacy scores in the subgroup classroom management was significantly different based on opportunities to see modeling (see Appendix Z). The 14 who reported “no” opportunities to see modeling had significantly higher classroom management efficacy than those who reported “few” ($p = 0.004$) and those who reported “some” ($p = 0.024$).

This seems to be counter intuitive until one examines the makeup of those 14 teachers (see Appendix AA). Ten of the 14 are alternatively certified teachers and ten of the 14 have 4 or 5 years of experience and hypothesis II, noted below, found that teachers with more years of experience have higher personal teaching efficacy. Fifty percent of the teachers who reported “no” opportunity to observe modeling have 5 years of teaching experiences and 75% have 4 years, this could be one factor influencing the statistics. Additionally, 11 of the 14 are in the age range between thirty and fifty years of age and according to Bandura’s

(1977) social cognitive theory mastery experiences is one of the strongest influences on self-efficacy. Being over thirty implies more opportunities to experience mastery experiences. Appendix BB1 gives a sample of comments made by respondents with personal teaching (7.05 \pm .821) and classroom management (7.34 \pm .957) efficacy scores above the mean. (See Appendix BB2 for the complete list of comments.) There is a mix of how much and what type of modeling was observed but all of the samples have 3 years or more experience. It seems the years of experience plays a more important role in classroom management efficacy than seeing methods modeled during certification or after. Respondent #115 said: "I began teaching before I earned my teaching certificate. I did not learn anything from all of the classes that I took that taught me "how" to teach. You can either teach or you can't." (Q 3) This is a strong statement that resounds with perceptions of high personal teaching efficacy.

Hypothesis II findings from analyses of variance. Overall personal teaching efficacy and self-efficacy in each of the three sub groups (instructional strategies, student engagement, and classroom management) were compared to the certification area (education, science, other), undergraduate major (education, life science, physical science, other), location of current school, a comparison between current school and high school the teacher attended, age of the teacher, and years of teaching experience. **For hypothesis II, a statistically significant difference was found between years of teaching and overall personal teaching efficacy, the subcategory student engagement efficacy, and the subcategory instructional strategies efficacy. No significant differences were found between years of teaching and classroom management There were no statistically significant findings between personal teaching efficacy, instructional strategies efficacy, student engagement efficacy and classroom management efficacy and the**

characteristics studied: certification area (education, science, other), undergraduate major (education, life science, physical science, other), location of current school, a comparison between current school and high school the teacher attended, and age of the teacher.

Overall mean scores for Hypothesis II. The one-way ANOVA, $F(4, 86) = 3.961$, $p < 0.01$, $\eta^2 = .156$, demonstrated statistically significant differences between the overall personal teaching efficacy mean scores and years of teaching experience (note that the maximum number of years was five, as that is the definition of the induction teacher, the focus of this study) (see Table 10). The critical $F_{(4, 87)}$ value at the 0.05 level with four degrees of freedom is 2.71 therefore the probability that the differences in the sample means would have occurred by chance is less than 5%. Seventeen (19%) of the 91 teachers had one year of experience, nine (10%) had two years, 19 (21%) had three years, 22 (24%) had four years, and 24 (26%) had five years of experience with the mean number of years being 3.3 ± 1.44 ($n = 91$). Traditionally certified teachers made up 58% (53) of the respondents, alternative certified through a college made up 23% (21), ABCTE certified made up 14% (13), and the remaining 5% (4) came from the “other” category.

Table 10
ANOVA Comparing Overall Mean to Number of Years Teaching (5 years or Less) ($n = 91$)

	SS	df	M^2	F	Sig.
Between Groups (Combined)	9.444	4	2.361	3.961	.005
Within Groups	51.257	86	.596		
Total	60.700	90			

Post hoc test—Games-Howell. Since the Levene equality of variances was violated the Brown-Forsythe equality of means was run and found that $F_{(4, 78.017)} = 4.615$, $p < .005$

with $\alpha = 0.05$ is significant so the post hoc Games-Howell test was run to discover what kind of differences exist between which groups (see Appendix CC). There was significant difference between the overall personal teaching efficacy mean scores of teachers with five years of teaching experience ($p = 0.006$) and those with two years of teaching experience. The second significant difference was between the overall personal teaching efficacy mean scores of teachers with three years of experience ($p = 0.036$) over teachers with only two years of teaching experience. Years of experience are one factor that impacts personal teaching efficacy of induction teachers. Generally speaking, teachers with more years of experience perceive themselves as having higher personal teaching efficacy regardless of pathway to certification.

Subcategory Student Engagement. The one-way ANOVA, $F(4, 86) = 2.714$, $p < 0.05$, demonstrated statistically significant differences between the subcategory student engagement and years of teaching experience when the maximum number of years was five or less (see Table 11). The critical $F_{(4,86)}$ value at the 0.05 level with four degrees of freedom is 2.48 therefore the probability that the differences in the sample means would have occurred by chance is less than 5%.

Table 11
ANOVA Comparing Subcategory Student Engagement with Number of
Years Teaching (Five Years or Less) ($n = 91$)

	SS	df	M ²	F	Sig
Between Groups (Combined)	8.220	4	2.055	2.714	.035
Within Groups	65.112	86	.757		
Total	73.333	90			

Post hoc—Games-Howell. Since the Levene equality of variances was violated the Brown-Forsythe equality of means was run and found that $F_{(4, 83.151)} = 2.994$, $p < .005$ with $\alpha = 0.05$ is significant so the post hoc Games-Howell test was run (see Appendix DD).

Comparisons using the Games-Howell test indicate that the mean difference for respondents' self-efficacy mean scores is different for teachers with both five years of teaching experience ($p = 0.003$) and teachers with three years of experience ($p = 0.016$) over teachers with only two years of teaching experience in the subgroup student engagement. Generally speaking those teachers with more years of experience, regardless of certification pathway, perceive themselves to have higher student engagement efficacy.

Subcategory Instructional Strategies. The one-way ANOVA, $F(4, 86) = 4.055$, $p < 0.01$ demonstrated statistically significant differences between the subcategory student engagement and years of teaching experience when the maximum number of years was five or less. The critical $F_{(4, 86)}$ value at 0.01 level with four degrees of freedom is 3.55 therefore the probability that the differences in the sample means would have occurred by chance is less than 1% (see Table 12).

Table 12

ANOVA Comparing Subcategory Instructional Strategies with Number of Years Teaching (Five Years or Less) ($n = 91$)

	SS	df	M ²	F	Sig
Between Groups (Combined)	12.436	4	3.109	4.055	.005
Within Groups	65.940	86	.767		
Total	78.376	90			

Post hoc test—Games-Howell. Since the Levene equality of variances was violated the Brown-Forsythe equality of means was run and found that $F_{(4, 79.470)} = 4.254$, $p < .005$ with $\alpha = 0.05$ is significant so the post hoc Games-Howell test was run. Comparisons using the Games-Howell test indicate that the mean scores in the subgroup instructional strategies on the TSES were significantly different for teachers with both five years of teaching experience ($p = 0.003$) and teachers with three years of experience ($p = 0.016$) over teachers with only two years of teaching experience. Generally speaking those teachers with more

years of teaching experience perceive themselves to have higher efficacy in the area of instructional strategies, regardless of certification pathway (see Appendix EE).

Summary of Hypotheses I and II. This study looked at the relationship between years of teaching for induction teachers and their personal teaching efficacy and the three subcategories student engagement, instructional strategies and classroom management. It was hypothesized (Hypothesis I) that induction teachers with a traditional certification would have a higher personal teaching efficacy, and a higher efficacy in each of the three subcategories (student engagement, instructional strategies, and classroom management); this was not proven to be true.

It was also hypothesized (Sub Hypothesis I) that traditionally certified induction teachers would have more opportunities to observe modeling (1.74 +.788) than alternatively certified induction teachers; this was proven to be true. Sixty-eight percent of the alternatively certified teachers had few to no opportunities to observe modeling during their certification process while only 32% of traditionally certified had few or no opportunities. Pathway to certification does make a difference in opportunities to see modeling. A significant relationship was also found between opportunities to see modeling (IV) and classroom management efficacy (DV). Those ($n = 14$) who had no opportunities to see modeling had significantly higher classroom management efficacy than those who saw few ($p = 0.004$) and those who had some ($p = 0.024$). Ten of the 14 who saw no modeling have four or more years of classroom teaching and more years of teaching experience causes higher teaching efficacy according to hypothesis II. Only four of the teachers who saw no modeling were traditionally certified and, as noted above, alternatively certified teachers have significantly less opportunities to see modeling. The combination of such a high percent

(71.4%) with more than three years of experience and with alternative certification (71.5%) impacted the overall classroom management mean efficacy of this small sample.

It was hypothesized (Hypothesis II) that those with more years of teaching experience would have a higher personal teaching efficacy; this was proven to be true. Those teachers with five years of teaching experience ($7.41 \pm .821$) where $p = 0.006$ and those teachers with three years of experience ($7.22 \pm .800$) where $p = 0.036$ had a statistically significant higher personal teaching efficacy than teachers with two years of experience. It was also found that teachers with five years of experience ($p = 0.003$) and teachers with three years of experience ($p = 0.016$) had a significantly higher self-efficacy over teachers with only two years of teaching experience in the subgroup student engagement. Significant differences were also found between teachers with both five years of teaching experience ($p = 0.003$) and teachers with three years of experience ($p = 0.016$) over teachers with only two years of teaching experience in the sub group instructional strategies (see Table 13).

These are particularly important findings since the sample size ($N = 91$) is relatively small sample and the probability of finding a significant difference is less likely. The TSES mean for those teachers with five years of experience ($7.41 + .821$) is $.36 \pm .821$ higher than the overall TSES mean for the entire sample population ($7.05 \pm .821$). The overall mean for teachers with three years of experience ($7.22 \pm .800$) is also slightly higher than the mean. The mean scores for overall personal teaching efficacy, student engagement efficacy, and instructional strategies efficacy increased for each year, except year two which has a small sample size ($n = 9$), and year four. Classroom management efficacy means were included in the table even though there was no significant relationship between management efficacy and years of experience because it has the same trends in rise and fall of mean scores. Notice that classroom management efficacy has higher means than the other three.

Table 13
Mean Scores for Years of Teaching ($n= 91$)

Years of Experience	TSES Mean	Student Engagement Mean	Instructional Strategies Mean	Classroom Management Mean
1 ($n = 17$)	6.87 ± .645	6.41 ± .885	7.05 ± .856	7.14 ± .887
2 ($n = 9$)	6.32 ± .652	5.94 ± .567	6.28 ± .722	6.73 ± 1.00
3 ($n=19$)	7.22 ± .800	6.71 ± .783	7.40 ± .911	7.34 ± 1.05
4 ($n= 22$)	6.93 ± .895	6.46 ± .997	7.06 ± .945	7.32 ± 1.08
5 ($n = 24$)	7.41 ± .747	6.96 ± .885	7.56 ± .841	7.73 ± .746

Sub hypothesis II said that that Missouri high school science teachers personal teaching efficacy would be higher if any one of the following were true: their undergraduate major was in science not education, their certification area was in a science such as biology, chemistry or physics not in education with a science endorsement, those with a master's or doctorate, those who are working in a school similar to the one they attended in size and location (rural, urban, suburban) and those who are younger. **None of these characteristics had a significant relationship with personal teaching efficacy or efficacy in the areas of student engagement, instructional strategies, or classroom management.**

Phase II Findings: Short Answer, Focus Group and Interview Data

This section is an analysis of the short answer questions from the online survey, the phone interviews and the focus group information. To aid in distinguishing where individual comments originated, the responses from the online survey are identified by respondent and then their ID number (1-125) from the survey. This is followed by a "Q" to represent what question and the question number (Q1-Q11). Those who participated in the phone interviews and focus group are identified with their pseudonym and either "phone interview" or "focus group" to indicate their participation level. Table 25 in Appendix M summarizes demographics on Phase 2 participants.

The TSES instrument provided a numerical value of perceived personal teaching efficacy and the additional questions added some depth of understanding to that value by providing opportunities to analyze the patterns and terminologies used in the discussion of teaching as a career and the events experienced during the process to answer the third question: According to teachers themselves, what combination of characteristics or experiences best explain the personal teaching efficacy of Missouri induction high school science teachers? Such characteristics or experiences might include: type of certification pathway, undergraduate and graduate educational experiences, teaching environment, relatives who were teachers, and personal high school experience.

The focus group and telephone interviews provided opportunities to ask questions based on the responses from the online survey essay questions. Two of the focus group members (Caden & Ellie) and one of the phone interviews (Sue) also participated in the online survey however the researcher did not share any of the survey findings with the participants during the conversations. Everyone answered the same questions, regardless of participating in the survey or not. The analysis of the constructed responses and recorded interviews expanded and enriched the researcher's understanding of the participants' responses concerning perceived personal teaching efficacy.

Efficacious Teachers and the Importance of Education as a Career, Classroom Management, and Focus on Student Success.

Respondents (online survey only) in Phase I self-scored on the TSES as efficacious with a mean score of 168.76 ± 19.51 out of 216. By asking the respondents to explain their perceptions on education as a career, how they manage their classrooms, and what strategies are in place to ensure student success the researcher was able to better understand the personal teaching efficacy of induction teachers. Efficacious teachers are effective teachers

and an effective teacher is the teacher who believes that all children can learn, takes responsibility for the learning that occurs in her/his classroom, and develops a positive learning environment. This analysis will relate teacher efficacy to the areas of education as a career, classroom management, and student success and show the importance each of these has in forming personal teaching efficacy in induction high school science teachers.

Education as career. A career is defined by Webster as “a profession or occupation which one trains for and pursues as a life work.” (Agnes & Guralnik (Eds.), 2002, p.222) and a job is defined as “a specific piece of work done by agreement for pay.” (p.770) Six respondents referred to teaching as their “calling” which Webster defines as “an inner urging toward some profession or activity; vocation” (p. 208). This study examined the respondents’ comments concerning whether they perceive teaching as a job or career and how that perception relates to their efficacy. The ($n = 77$) respondents who saw education as a career had lower mean scores for overall efficacy, student engagement efficacy, and instructional strategies efficacy (see Table 14). Perhaps those who see education as a career, a life’s work, reflect more deeply on their own effectiveness and score themselves more harshly than those who see teaching as the job. Or perhaps the respondents simply use the term job and career interchangeably and the terminology is a matter of life experiences. This section examines the respondents’ comments in the areas effectiveness, experience, mentors, mindset and the relationships that exist with personal teaching efficacy related to years of experience. Appendix FF1 has a sampling of comments from respondents who self-scored above the mean on TSES on education as a career. They seem to interchange the terms job and career but the mindset of a career comes out in their comments (complete list of comments in Appendix FF2).

Table 14

Comparison of Mean scores Between “Job” and “Career”

Certification	TSES Mean (7.05±.821)	Student Engagement (6.58±.903)	Instructional Strategies (7.19±.933)	Classroom Management (7.34±.957)
Education as a Career (<i>n</i> = 77)	7.03	6.46	7.16	7.40
Education as a Job (<i>n</i> = 14)	7.14	6.66	7.35	7.26

Factors influencing perceptions.

Effectiveness Respondents were asked about their perceptions of their own effectiveness. The majority (74/ 91) of the respondents stated they felt effective in the classroom, that they “are well suited for teaching” (Respondent #8, Q10), and “there hasn't been a kid, even a difficult one, that I couldn't relate to” (Respondent #33, Q.8). Respondent #8 is a fifth year traditionally certified teacher who self-scored 7.21 on the TSES and Respondent 33 is a traditionally certified teacher with one year of experience who self-scored a 7.00 on the TSES. Twenty-two of the 74 respondents who said they considered themselves effective voiced the expectation to improve as they add years of experience. Only 17 stated they were not sure of their effectiveness yet. One first year teacher said: “I don't know yet how effective I am, but I think I was born to do this”. (Respondent 33, Q8) She is a traditionally certified teacher who self-scored a 7.00 on the TESE. **The 16 others who were also not yet sure of their own effectiveness stated lack of experience as the major factor, but see themselves improving with each additional year of experience.**

Experience Different influences were given to explain how the respondents measured their own effectiveness. Forty-four related their effectiveness to student outcomes, four based it on evaluations from administration, 12 referred to class size, 26 just stated they were effective with no reasons, and five left the question blank. Of the 44 who related

effectiveness to student outcomes only 18 of the respondents specifically stated that they were responsible for the student's learning, 12 based it on state assessment scores, six looked at student attitudes and two based it on how many students signed up for their elective classes. One respondent said: "I am effective if my students learn how to question, how to think, how to problem solve" (Respondent #45, Q8) Respondent #45 self-scored a 6.46 on the TSES and has three years of teaching experience.

This statement from respondent # 86: "It is about constant changing and understanding what it means to be effective to the students" in referring to how one can measure effectiveness sums up the attitude from those who saw themselves as responsible for the students' outcomes (the definition of an effective efficacious teacher) Respondent #86 is a third year traditionally certified teacher who self-scored a 7.50 on the TSES.

Respondent #89 voiced what five others felt about their effectiveness when he said: "I am effective with students that are open to receiving instruction and learning. I have no effect on students that do not care about themselves or their futures" (Q.8). Respondent #89 is a first year traditionally certified teacher who self-scored a 7.50 mean on the TSES.

Respondent #74 is a first year traditionally certified teacher who is voicing a low self-efficacy (6.29 mean score): "I am effective for some students and I fail some students entirely. I am OK as a teacher. I think **it will take me a while to hone my skills**, but might get burned out before I'm really effective" (Q 8).

Mentors When looking at responses concerning mentoring we find 19 who had negative experiences, 39 who had positive experiences, 11 who had no mentoring, 12 who said they had no influence and 11 did not respond. Out of the 39 who had a positive experience 16 said **their mentor influenced their perceptions of education**. Five said it was a small but positive influence, three said it helped with classroom management, and

eight said their mentors helped with foundational principles needed to be an effective teacher. One said: “My first mentor hated his job and said that most of his classes are filled with useless degenerate students. He was depressing so I found others teachers to ask for help” (Respondent #1, Q 9).

Co-workers also function in the role of unofficial mentors for induction teachers. An analysis of the comments about how their peers (10) impacted their perception off education as a career four of the respondents had positive comments about their fellow teachers and two had negative. The comment from respondent #60: “to see someone in my department who has taught for 43 years and is still doing it and the students still enjoy is something to look forward to” shows he was positively influenced by this co-worker. Respondent #60 is a fifth year traditionally certified teacher who self-scored a 6.67 mean on the TSES. On the negative side of peer influence, respondent #66 stated “the gossip-and-gripe mill is disheartening” and respondent #71 noted “the tenured staff in my department, in general have helped me understand that I may not want to be in education forever.” Both of these respondents have three years of experience and are traditionally certified teachers. Respondent #66 self-scored a 7.75 mean and respondent #71 self-scored a 7.00 mean on the TSES.

Mindset The respondents’ mindset about teaching as a career ranged from “it’s a job” (Respondent #21, Q 1) to teaching is a gift, “definitely a calling”. (Respondent #102, Q 7) Eighty-five percent stated they “loved their job”, “loved their career”, or that they “live to teach” and the remaining 15% said things like “it’s a job”, “under contract”, or “made a commitment”. Respondent # 101 who referred to teaching as “a calling” is an alternatively certified teacher (Career and Tech Ed) with three years of teaching experience who gave themselves a mean sore of 6.67 on the TSES. Ten of the 14 who said it was a job or a

renewed contract are traditionally certified teachers, one is finishing up a Teach for America commitment, one is ABCTE certified and the last two are alternatively certified through a college. The remaining 77 presented the idea of loving what they do, seeing teaching as a venue to touch the future and change the lives of the students they encounter. Forty-three of those respondents who love their career are traditionally certified and the remaining 34 are alternatively certified. Two participants stated they were returning but their reasons were ambiguous. Respondent #56 a teacher with five years of experience who followed the doctoral route to certification and self-scored an 8.17 on the TSES stated “teaching is still a challenge” (Q. 1) as the reason he was returning and respondent #77 (TSES mean-4.75) who is alternatively certified through a college and has two years of teaching experience said “things are improving” as his reason for returning in the fall.

Seven of the fourteen who referred to teaching as a job self-scored themselves below the mean for personal teaching efficacy ($7.05 \pm .821$), six self-scored themselves below the mean for student engagement efficacy ($6.58 \pm .903$) and for instructional strategies efficacy ($7.19 \pm .933$), and eight self-scored themselves below the mean for classroom management ($7.34 \pm .957$) (see Appendix GG). The ABCTE certified first year teacher self-scored above the mean for all categories. This respondent (#72) stated he is also a pastor and the job of a pastor is very similar to that of a teacher and could impact his personal efficacy. Five of the 14 had 5 years of experience, four have 3 years, three have 1 year, one has 2 years and the final respondent has 4 years of experience.

The 77 who referred to education as a career consist of 43 traditionally certified, 18 with alternative certification through a college, 12 ABCTE, and four with other certifications (Doctoral and career & technical education) (see Table 15). Fourteen of the 77 have one year of experience, eight have 2 years of experience, 15 have 3 years, 21 have 4 years, and 19

have 5 years of experience. The traditionally certified teachers scored themselves below the mean in all the categories except classroom management. The alternatively certified through a college self-scored below the mean in student engagement and instructional strategies, the ABCTE self-scored below the mean in all four areas, and the teachers in the alternative – other group scored themselves above the mean in all categories.

Table 15

Mean Scores for those who see Education as a Career ($n = 77$)

Certification	TSES Mean (7.05±.821)	Student Engagement (6.58±.903)	Instructional Strategies (7.19±.933)	Classroom Management (7.34±.957)
Traditional ($n=43$)	7.00	6.39	7.18	7.38
Alt-College ($n=18$)	7.08	6.55	7.15	7.51
ABCTE ($n=12$)	6.99	6.55	7.14	7.22
Alt. Other ($n=4$)	7.25	6.61	7.41	8.06

When comparing efficacy scores from phase I, the data indicates that those teachers who consider themselves not as effective have lower efficacy scores than the research sample in TSES, student engagement; instructional strategies and classroom management (see Appendix HH). **The 22 teachers who said they were effective but not as effective as they could be scored below the mean on all of the efficacy instruments.** Fourteen of these teachers are traditionally certified, three are alternatively certified through a college, and five are ABCTE certified. Six have 1 year of experience, five have 2, 3 and 4 years of experience and one has 5 years. Twelve of the 22 reported “few” opportunities to observe modeling, seven reported “some”, one reported “none”, and two reported “many”. **Those who currently see themselves as less efficacious also see themselves improving with more experience;** clearly there is a relationship between years of teaching and personal teaching efficacy.

The analysis of years of experience and personal teaching efficacy were found them to be significantly related (Hypothesis II). There is a relationship between years of teaching and perceptions of efficacy. **Twenty-six of the respondents are either first or second year teachers and below the mean (3.3 ± 1.44) for years of experience, 13 (50%) stated that each year of experience mattered on their perceptions of their own effectiveness. Of the 65 respondents with 3 years or more experience seven (12%) mentioned years of experience and they concurred with the less experienced teachers that experience matters in the area of being an effective teacher.** Comments made by first and fifth year teachers were compared to determine if that relationship was portrayed (see Appendix II). The two first year teachers both mention that they do not feel as effective and need more experience while the two five year teachers talk about being comfortable and enjoying making a difference with students. **The two more experienced teachers have efficacy scores that are all over the means while the two first year teachers' scores are below the mean for personal teaching efficacy ($7.05 \pm .821$), student engagement efficacy ($6.58 \pm .903$), and respondent #74 also scored below the mean for instructional strategies ($7.09 \pm .933$).** All four scored above the mean for classroom management efficacy ($7.34 \pm .957$). It seems experience helps form efficacious teachers.

Only fourteen of the respondents called teaching a job most (77) saw it as a career, as so well stated by Respondent #43 (Q1): "I find teaching to be a vocation, not simply a job, and I love little more than being in a classroom." Or respondent #45 who said "I want to be in the classroom until they drag me out kicking and screaming. I love teaching and can't imagine doing anything else." (Q 7) Respondent 43 is a first year ABCTE teacher who self-scored a 6.88 on the TSES and Respondent 45 is a third year traditionally certified teacher who self-scored a 6.46 on the TSES.

Perhaps respondent #85, a third year ABCTE teacher who self-scored a 7.04 on the TSES, sums up how educators with high self-efficacy should approach their experiences. She states:

My thoughts on education as a career are not about the changes in education but about how I enjoy what I am doing. There will always be mentor, administration, policies, and class size issues. But those are minor. If you enjoy teaching then teach because the other stuff is just the hoops you have to jump through to get into a classroom with students. (Q 10)

Classroom management. The analysis of data from the online survey questions indicated those with an alternative certification (ABCTE, Career and Tech Ed, Doctoral route) pathway reported significantly ($\alpha = 0.05$) less opportunities to observe modeling techniques during their certification process. The respondents' comments on their classroom management provide additional insights on their perceptions of what affects their ability to effectively manage their own classrooms and what factors contribute to that success.

Thirty-eight of the 91 respondents self-scored below the mean ($7.34 \pm .957$) on classroom management and 53 scored above the mean. The same general themes emerged from both groups: Consistency/routine (27) and rules (25) were the two prominent themes in classroom management strategies used by 52 from this group. Seven said they used proximity, seven said they relied on professional's theories and ideas (BIST, Harry Wong) and 14 said they used respect. "You give respect you get respect," Respondent #26, an ABCTE certified teacher with 4 years' experience who self-scored a 7.13 on classroom management efficacy. One respondent said humor was their method of classroom management and five left the question blank. When one (Respondent #66) teacher responded to question four on how he manages his classroom and what strategies he used, he said: "I

don't. I have to constantly remind them to be quiet or to do what I ask. It takes a lot out of me and constantly grates on my patience." This respondent has three years of teaching, holds a traditional certificate through a college, a TSES mean score of 7.75, and self-scored a mean of 7.88 on classroom management. Respondent #66 self-scored above the mean on classroom management but in the essay question he clearly states he does not have good classroom management strategies. It seems when he was answering the questions he perceived himself as controlling and communicating his rules but in the essay he admitted he perceives himself as ineffective in classroom management. One respondent said humor was the method employed to maintain the classroom and four left the question blank. Appendix JJ1 contains a sample of the comments made by respondents who self-scored above 8.00 on personal teaching ($7.05 \pm .821$) and on classroom management ($7.34 \pm .957$) efficacies. Those with high efficacy seem to use respect and community building, which is in the same venue as respect, as the main classroom management technique (complete set of respondents comments in Appendix JJ2).

Hypothesis II found that teacher with more years of experience have higher personal teaching efficacy, this is reflected in the data on classroom management (see Appendix KK). Forty-two percent of the group that scored below the mean has less than 3 years of experience and 35.7% have more than 3 years of experience. **In the group that scored above the mean** only 13.0% have less than 3 years of experience and **41.6% have more than 3 years of experience**. This is in alignment with the findings from hypothesis II that years of experience impact efficacy. Sample comments support this claim:

My first year I definitely had my doubts- but now I am the decisive element in my classroom. Respondent #106, alternatively certified, 5 years of experience, self-scored 8.38 on classroom management

Each year I become a more effective teacher by constant reflection and feedback on what I do and how I can improve it. Respondent # 86, traditionally certified, 3 years of experience, self-scored 8.38 on classroom management

Appendix LL contains the comments from all the respondents with classroom management scores above the mean and more than 3 years of experience and a complete set of comments related to classroom management and years of experience can found in Appendix MM.

Student success. The respondents viewed their role in the success of their students from a variety of perspectives. Six saw themselves as the dispenser of facts and record keeper placing the responsibility on the student to grasp and retain the information. Seventy-five saw themselves in a variety of pastoral roles: lifestyle coach (17), facilitator (20), motivator (17), guide (11), and environment builder (10). Fifteen of the respondents saw student learning as their responsibility and 18 saw the responsibility for learning mainly on the shoulders of the students themselves. This section compares the respondents' perceptions of the teachers' role and the students' role in student success.

Teacher's role. In the sub-category of the teacher's role in student success six respondents simply consider themselves as a dispenser of facts, as stated by Respondent #116: "My role is to do my best in presenting content" (Q. 6). The majority (75) saw themselves in different nurturing roles. Seventeen saw themselves with the challenge of preparing their students for the future, to "help them establish good learning habits that they can carry to any class." (Respondent #19, Q. 6) Respondent #19 is an ABCTE certified teacher with 4 years of experience who self-scored a 6.33 on the TSES. While 20 see their role as the facilitator, a resource (#9, Q. 10) to "guide them academically...Let them know I believe in them & care about their success" (#7, Q 10). "My job is to provide opportunities

for my students to be successful”. (# 38, Q6) Respondent #116 is a traditionally certified teacher with four years of experience who self-scored a mean of 6.58 on the TSES, respondent #9 is an alternatively certified teacher with three years of experience who self-scored a mean of 8.15 on the TSES, and respondent #38 is a traditionally certified teacher with five years of experiences and a self-score of 5.21 on the TSES mean.

The respondents who saw themselves as motivators (17) say teachers are “responsible for giving the assistance and motivation to help make student successful” (Respondent #86, Q. 6), some (9) want to motivate them achieve success and others (8) to take responsibility and do their work. Both pathways should lead to student success. Those nine of the 11 who saw themselves as guides for their students were either “making sure they get it” (Respondent #26, Q 6) when the concepts are difficult (4), helping them find their own strengths (5) and determine “what works and what doesn’t work for them” (Respondent 97, Q. 6). The last two were not specific in what they meant by guide.

The final group of environmental builders (10) painted a more inclusive concept of the teacher’s role in student success. They spoke of building “a good learning environment, to do my best to see that all understand.(Respondent #8, Q. 6) Five of them spoke of making learning fun and respondent #115 sums it up: “I think it is my job to make my students enjoy science” (Q.6).

When comparing respondents’ perceptions of their role in student success to efficacy scores those who saw themselves as “motivators” had efficacy scores above the mean for personal teaching efficacy, and for efficacy in student engagement, instructional strategies and classroom management (see Table 16). Those who strive to create an environment conducive to student success had efficacy scores above the mean for overall personal teaching efficacy and for efficacy in instructional strategies. The group that considered

themselves facilitators or those who provide opportunities for student to be successful scored above the mean in classroom management efficacy but none of the others. The remaining groups had no scores above the mean.

Table 16

Teacher's Role in Student Success and Efficacy Scores ($n = 91$)

	TSES Score (7.05 \pm .821)	Student Engagement (6.58 \pm .903)	Instructional Strategies (7.19 \pm .933)	Classroom Management (7.34 \pm .957)
Dispense Facts ($n = 6$)	6.90	6.21	7.10	7.31
Life Skills ($n = 17$)	6.76	6.34	6.88	7.03
Facilitator ($n = 20$)	6.99	6.37	7.18	7.34
Motivator ($n = 17$)	7.30	6.85	7.44	7.59
Guide/Coach ($n = 11$)	6.98	6.41	7.05	7.32
Create Environment ($n = 10$)	7.05	6.41	7.37	7.31
Blanks ($n = 10$)				

Who is responsible: Teacher or Student. The final dimension for respondents' perceptions of the teacher's role in student success is accountability, teachers' or students' or both. Thirty-six percent respondents expressed the idea "that all human beings are capable of learning" (Focus Group, Mary) but only 33 addressed the question of who is responsible for student learning in their comments on student success. Eighteen respondents put the responsibility on the student with comments like "they (*students*) are responsible for their learning" (Respondent #4, Q 6), "when students choose not to do their work, I do not feel that I am responsible" (Respondent #57, Q6), since they are given the choice, or Respondent #116 who said: "I do feel that the adage 'you can lead a horse to water, but you can't make him drink' does apply to some science content, and to some students, at times". Respondent #4 is an alternatively certified teacher with 5 years' experience who self-scored a 7.33 on the TSES, Respondent #57 is traditionally certified with 2 years' experience that self-scored 6.63

on the TSES and Respondent #116 is also traditionally certified but has 4 years of experience and self-scored a 6.58 on the TSES (see Appendix MM).

Fifteen said it was their responsibility to teach the content to the students and make sure the students understand but nine added qualifiers. One example came from Emma (Focus Group): “like if their grade in the class is a failing grade but it’s because they won’t turn anything in, that... no... I don’t think it’s my fault.” Emma went on to talk about the idea that she is responsible for their learning but stressed that the students must take an active role or her responsibility is negated. Mary (Focus Group) also acknowledged that she has some accountability when she said: “If they are not doing it (*learning*) in your classroom of course *some* of it’s your responsibility as the teacher.” (Focus Group, Mary). The key word here “some” is on the teacher. The six who accepted their role as the one responsible for student learning in their class rooms are well represented in the response from Ellie (Focus Group):

I think that *all their success* and *all their failures* are dependent upon me as their teacher. I think it’s like my job. Like it is 100% my job to make them succeed. Like that is why I am in the classroom. Realistically the amount of energy I have and the time in the day and in the class and there is a lot going on but it’s still my responsibility.

She went on to say:

Still think if they’re not engaged it’s my job to get them engaged. It is MY (Emphasis respondents) job to teach them it... if they understand it, that’s all on me. Success, failure ... that’s just the only way I can understand what I do I guess and strive for.

Mary is an alternatively certified teacher with four years of experience while Ellie and Emma are both traditionally certified teachers in their first year of teaching.

Comparison of efficacy score indicates both perceptions on who is responsible scored much the same (see Table 16). Both groups were above the mean in personal teaching efficacy, instructional strategies efficacy and classroom management efficacy; however they were also both below the mean in student engagement. Their view of who is responsible for student learning does not seem to be related to their perceptions of self-efficacy. However research indicates that the teacher is the one who has the most impact on student success (Fulton, Yoon, and Lee, 2005; Mendro, 1998; Wright, Horn and Sanders, 1997). Assuming Bandura's (1977) claims that efficacious teachers are also effective teachers, then those teachers who see themselves as the one responsible for student learning would suggest they are the more efficacious teacher.

Table 16
Comparison of Efficacy Scores With Responsibility for Student Learning

	Student Responsible for Learning ($n = 18$)	Teacher Responsible to Teach ($n = 15$)
TSES ($7.05 \pm .903$)	7.09	7.05
Student engagement ($6.58 \pm .903$)	6.44	6.48
Instructional strategies ($7.19 \pm .933$)	7.25	7.34
Classroom management ($7.34 \pm .957$)	7.47	7.66

Summary

The purpose of this study was to determine the relationships between certification pathway (traditional or alternative) and personal teaching efficacy, as well as years of experience (1-5) and personal teaching efficacy, when focused on induction high school

science teachers in Missouri. The relationship between opportunities to see modeling and pathway and the influence of seeing modeling on classroom management efficacy were also analyzed.

The main finding that emerged in this analysis was personal teaching efficacy, student engagement efficacy and instructional strategies efficacy are significantly influenced by years of teaching experience. This suggests that experience is critical in developing perceptions of efficacy. This influence of experience also had an effect on those teachers who reported seeing “no” modeling but had higher classroom management efficacy. The sample was small ($n = 14$) and made up of 10 alternatively certified teachers, seven teachers with 5 years of experience, three teachers with 4 years of experience giving a total of 71.4% of the sample having over 3 years of experience (see Appendix AA). There is also a significant relationship between the certification pathway and opportunities to see modeling, with traditionally certified teachers having more opportunities to see modeling during their certification process; however, it seems the experience of being in the classroom as the teacher has more impact on efficacy than observing modeling during the certification process.

The analysis of the qualitative constructed responses, interview questions and focus group answers provided a better understanding of the respondents’ perceptions of personal teaching efficacy and how their perceptions influence their teaching. Overall the induction teachers who participated in this study see teaching as a career that they enjoy and perceive that they can make a difference in the students they encounter. **Those teachers with less teaching experience talked about teaching being more difficult than they expected; that they were not as effective as they could but expect to improve with experience.** They also mentioned feeling effective enough to make a difference for their students; none said they

wanted to quit. The **teachers with more experience spoke of education as a career that takes a lot of time**, is not as well respected as they once thought it was, and as a career does not provide as much room for advancement. These **more experienced teachers also talked about the career being very rewarding (intrinsically), and they felt very effective with their students**. In the group of teachers with 5 years of experience ($n = 24$) there were rumblings of discontent with high school teaching, and at least one voiced the opinion that they would not be staying in education very much longer. So experience brought more confidence through their mastery experiences but also brought some feelings of discontent. Chapter five will merge all the research findings and compare and contrast them with the Tschannen-Moren and Woolfolk Hoy survey results and the information gathered from the existing research.

Chapter 5

Discussion, Conclusions, and Recommendations

This chapter presents a summary of the study on traditionally and alternatively certified induction high school science teachers in the state of Missouri and their perceptions of their own personal teaching self-efficacy. The purpose of this discussion is to provide the evidence found supporting the relationship between years of experiences and personal teaching efficacy, student engagement efficacy, and instructional strategies efficacy. It will also discuss the evidence supporting the relationship between opportunities to observe modeling during the certification pathway (alternative and traditional) and the relationship between observing modeling and classroom management efficacy. These findings will be supported with the insights of the participating teachers on what characteristics and experiences helped form their personal teaching efficacy. Conclusions drawn from the data presented in chapter four are discussed along with a presentation of implications for action and recommendations for further research.

The discussion begins with an overview of the problem, the purpose and research questions, and a short review of methodology. This is followed with a discussion of the significant findings and their relationship to the literature review. The final section contains conclusions and recommendations to possibly improve induction teachers' perceptions of their own personal teaching efficacy and to improve approaches to teacher certification thereby increasing personal teaching efficacy and classroom effectiveness.

Summary of study

Problem. Research done by the National Commission on Teaching and America's Future (2003) indicates that 50% of induction teachers (years one to five of teaching) leave the profession during those first five years. This seems to be an unusually high rate of

attrition and the cause needs to be determined and rectified. Alternative and traditional routes provide different experiences to pre-service teachers. The traditional certification route provides exposure to multiple and ongoing field-based opportunities where they observe, assist, tutor, instruct, and interact with several experienced teachers; many of these encounters begin during the sophomore year of teacher education. However, most of the alternative certification routes have the new teacher in the classroom as the primary teacher while simultaneously enrolled in classes on pedagogy and educational foundations. This approach gives the alternative certified teacher little opportunity to observe and learn from other more experienced teachers but does provide real life experiences while they are learning about pedagogy. Darling-Hammond (2006) found that teacher preparation and knowledge in the areas of teaching and learning, content knowledge, and classroom experience are leading factors in teacher effectiveness. Several studies indicate that teacher efficacy serves as the foundation of teacher behaviors (Angle & Moseley, 2009; Enochs, Smith & Huinker, 2000; Tosun, 2000) and has a direct influence on classroom behaviors. It seems a teacher's perception of their own teaching self-efficacy could affect how that teacher performs in the classroom which in turn affects student achievement.

Purpose and research questions. Believing in one's ability to accomplish a task is the first step in actualizing the completion of the task. According to Albert Banduras' (1986) social cognitive theory this concept of self-efficacy applies to most of the situations we face in life including the induction teacher's successful acclamation into the world of education. The purpose of this study was to determine the relationships between certification pathway (traditional or alternative) and personal teaching efficacy, as well as years of experience (1-5) and personal teaching efficacy, when focused on induction high school science teachers in Missouri. The research focused on three questions: (1) what is the relationship between type

of certification (alternative or traditional) of Missouri induction high school science teachers and their perceptions of personal teaching efficacy; (2) what is the relationship between induction high school science teachers' life experiences: pathway, high school experiences, size of school, level of education, years of teaching, relatives who were teachers, age and their perceptions of personal teaching efficacy; and (3) according to teachers themselves, what combination of characteristics or experiences best explain the personal teaching efficacy of Missouri induction high school science teachers? Such characteristics or experiences might include: type of certification pathway, undergraduate and graduate educational experiences, teaching environment, relatives who were teachers, years of experience, and personal high school experience.

Review of methods. This sequential mixed methods research was organized into two phases and based on Bandura's (1977) social cognitive theory. Phase 1 was a concurrent quantitative/qualitative study that utilized the "Teacher Sense of Efficacy Scale" (TSES) created and tested by Tschannen-Moran and Woolfolk Hoy (2001) and a set of short-answer questions designed to collect information addressing demographic data and personal experiences. This instrument was utilized as an online survey that was sent to high school science induction teachers (criterion sample) in the state of Missouri in the fall of 2011. Phase 2 was a basic qualitative study using telephone interviews and a focus group with Missouri induction high school science teachers who were either traditionally or alternatively certified. For purposes of data analysis the alternative certified teachers were used as one group and further subdivided into three subgroups: alternative through a college or university, American Board for Certification of Teacher Excellence (ABCTE), and other (doctoral, career & technical education, & Teach for America). The traditionally certified teachers formed the second major group.

The short answer questions in the survey provided quantitative information on the relationship between certification (Traditional, alternative through a college, ABCTE, or other) each respondent holds and where they obtained their teaching certification, their certification areas, their teaching history, level of post high school education, and the high school they attended. The questions also provided qualitative data on the respondents' perceptions concerning teaching as a career, classroom management and student success as related to their personal teaching efficacy. This information provided factor classifying data and it also provided information to aid in building a picture of what helped form their perceptions of personal teaching efficacy. To better understand the respondents' experiences while preparing for certification one question asked about their encounters with the modeling of various teaching strategies. Other questions addressed classroom management strategies and how respondents saw their role in student success in their classroom (Darling-Hammond & Bransford, 2005). The survey concluded with questions about respondents feelings on teaching as a career, their perceptions of their own effectiveness, what factors were most influential on their outlook on education as a career choice, and if they were returning to the classroom in the fall. These questions provided information that was not addressed in the teacher belief instrument and a method for determining the relationships between classification factors and teacher personal teaching efficacy. This information along with the focus group responses and telephone interviews from Phase 2 was utilized to determine relationships between personal teaching efficacy and certification pathway and what combination of characteristics, from the teacher's perspective most influenced the formation of teacher perceptions of self-efficacy.

The initial analysis of the TSES was based on the scoring guide developed by Woolfolk and Hoy (2010) (see Appendix I). The 24 questions on the instrument have been

determined to assess overall personal teaching efficacy and three factors: efficacy in student engagement (Items 1, 2, 4, 6, 9, 12, 14, 22), efficacy in instructional strategies (Items 7, 10, 11, 17, 18, 20, 23, 24) and efficacy in classroom management (Items 3, 5, 8, 13, 15, 16, 19, 21). (See Appendix K for the questions by subscales.) The instrument was scored using a Likert scale (1 = nothing, 3 = very little, 5 = some influence, 7 = quite a bit, and 9 = a great deal) (Tschannen-Moran & Woolfolk Hoy, 2010). The reliability of the instrument was determined by comparing mean scores between the TSES from Tschannen-Moran and Woolfolk Hoy and Gaither (2012). All of the scores were within one standard deviation of the mean (see Table 2).

The short answer portion of the survey, the phone interviews, and the focus group were analyzed using Nvivo-10 and a code book was developed (see Appendix J). An audit trail was maintained to establish construct validity and open coding was used to identify initial ideas in the essay questions, interviews and focus group. Once major concepts were identified selective coding was used to develop homogenous groups for the final code book. The quantitative and qualitative data were synthesized into multiple tables to aid in building a theory on the relationship between the respondents' perceptions of personal teaching efficacy and mastery experiences, vicarious experiences, respondents' physiological and emotional states, and social persuasions (see Appendices FF, JJ, KK, & LL).

The basic procedures used on the quantitative data collected (frequency distribution, analysis of variance, and correlation coefficients) helped to determine any statistically significant relationships between the path to certification and the respondents' personal teaching efficacy. Analysis of variances was used to determine which classification traits (IVs) most influenced teacher self-efficacy (DV) and best explain the respondents' personal teaching efficacy scores on the TSES. The Levene test for homogeneity of variances ($\alpha =$

0.05) was run to determine which post hoc multiple comparison tests to implement. If the equal variance assumption was violated using the Levene test then the Brown-Forsythe robust test of equality of means ($\alpha = 0.05$) was run. The Tukey (HSD) test was used when the assumption of homogeneity of variance was met and the Games-Howell test when the homogeneity of variance was violated. To aid in determining if how they perceive themselves aligns with their comments on their abilities in the classroom the respondent's self-scores on the TSES was also compared to their comments concerning their views on teaching as a career, their experiences in the classroom and during their certification process, and their views on the various people responsible for student success.

Major findings

The major significant findings from this research were the relationship between years of experience and personal teaching efficacy, the relationship opportunities to see modeling has with personal teaching efficacy, student engagement and instructional strategies. Even though there were no significant relationships between pathway to certification and personal teaching efficacy, there was a significant relationship between pathway to certification and opportunities to see modeling and between opportunities to see modeling and classroom management efficacy. This section will briefly discuss these relationships.

Years of experience. The number of years of teaching experience an induction teacher has seems to have more effect on perceptions of personal teaching efficacy than certification pathway, mentoring experiences, their school environment, or other life experiences. It was found that teachers with 5 years of experience had a significantly ($p = 0.005$) higher personal teaching efficacy than those with only 2 years of experience at $\alpha = 0.05$ and that teachers with 3 years of experience also had significantly ($p = 0.030$) higher personal teaching efficacy than teachers with 2 years of experience at $\alpha = 0.05$. The same

relationship was found between student engagement efficacy and instructional strategies efficacy; teachers with 5 years of experience had a significantly higher student engagement efficacy ($p = 0.035$) and instructional strategies efficacy ($p = 0.003$) than those with 2 years of experience at $\alpha = 0.05$. Those teachers with 3 years of experience also had a significantly higher student engagement efficacy ($p = 0.006$) and instructional strategies efficacy ($p = 0.016$) than teachers with 2 years of experience at $\alpha = 0.05$. This higher personal teaching efficacy was supported by the responses from the respondents. Fifty percent of the teachers ($n = 26$) with less than 3 years of experience (3.3 ± 1.44 mean for years) said specifically that each year of experience made teaching a better fit. Only 12% of the teachers with 3 years or more experience mentioned their years of experience when speaking of their own effectiveness yet they concurred with the less experienced teachers that each year was better.

There is clearly a relationship between years of teaching experience and teacher efficacy. A study by Moseley, Reinke, and Bookout (2002) on preservice teachers and their perceptions of self-efficacy found that these preservice teachers “did not yet grasp the complexity of the art of teaching” (p.13); perhaps the same can be said for these beginning teachers and their understandings of the “complexity of teaching” (Britzman, 2003). Since people rely on their own social and emotional states (Bandura, 1995) to determine their effectiveness, induction teachers might see negative student success as an indicator of their own ineffectiveness. After spending multiple years in the classroom and experiencing more mastery experiences and beginning to understand the art of teaching, induction teachers’ perceptions of their own personal teaching efficacy should increase. This is further supported by a research study conducted by Woolfolk Hoy (2000) which found that personal teaching efficacy increased during preservice training but decreased during the first year of experience. Since mastery experiences are the most powerful factor (Tschannen-Moran,

Woolfolk Hoy & Hoy, 1998) affecting personal teaching efficacy, more years of experience means more opportunities for successful experiences.

Years of experience are a significant factor in a teacher's personal teaching efficacy and in turn, teacher effectiveness. Bandura (1977) makes the claim that "teachers with a sense of instructional efficacy operate with the belief that difficult students are teachable through extra effort and appropriate techniques" (p. 240). He also states (1977) that "occasional failures that are later overcome by determined effort can strengthen self-motivated persistence through experiences" (p. 81). Even those negative experiences or perceived failures during the first year or two of teaching can serve to strengthen the personal teaching efficacy as teachers gain years of experience. "Learning to teach—like teaching itself—is always the process of becoming: a time of formation and transformation, of scrutiny into what one is doing, and who one can become" (Britzman, 2003, p. 31).

Opportunities to observe modeling. A second set of significant findings was the relationship between pathway to certification and opportunities to see modeling and between opportunities to see modeling and classroom management efficacy. This section will first discuss how pathway to certification related to opportunities to see modeling and then on how opportunities to see modeling related to the self-efficacy scores in the subcategory classroom management.

Teachers who followed the traditional route to certification had significantly more opportunities to observe modeling ($p = 0.000$) at $\alpha = 0.01$ than those who were alternatively certified. The most significant differences were between ABCTE certified ($p = .000$) and those who followed the pathways classified as "Other" ($p = .000$) –Teach for America certified, Career and Technical Education certified and those who followed the doctoral route. However the traditionally certified teachers also had significantly more opportunities

to observe modeling than those who were alternatively certified through a college or university ($p = .010$). Sixty-eight percent of the traditionally certified teachers reported “some” or “many” opportunities to observe modeling during the certification process. Fifteen percent of the ABCTE certified teachers reported “some” opportunity to observe modeling, 0% reported “many” opportunities to observe modeling during the certification process while 84.6% reported “few” or “no” opportunities to observe modeling. Fifty percent of the four teachers who followed the doctoral route, career and technical education route or Teach for America reported “no” opportunities to observe modeling during the certification process and the other 50% only reported “some” opportunities. Of those who followed the alternative route through a university only 38% reported “some” or “many” opportunities to observe modeling. When the respondents discussed people who influenced their views on education 16 claimed their mentoring experience had a positive influence on their classroom management (3), foundational organization and strategies for teaching (8) whereas five just said mentoring only had a small positive impact. Bandura’s (1977) social cognitive theory says that vicarious experiences have an effect on the development of personal self-efficacy. He went on to say that “diversified modeling” (p. 82) is more effective than just one performance by a single model.

There also seems to be a significant impact on self-efficacy in the area of classroom management by the number of opportunities a teacher has to observe modeling during the certification process; however it was an unusual finding. Teachers ($n = 14$) who had “no opportunity” to observe modeling reported a significantly higher classroom management efficacy ($p = 0.035$) at $\alpha = 0.01$ than those who saw “few” ($p = 0.004$) or “some” ($p = 0.024$) modeling. This seems counter intuitive until the data is analyzed. Ten of the 14 have more than 3 years of teaching experience (71.4%) and 10 of the 14 are alternatively certified

teachers. Usually alternatively certified teachers are older than most beginning teachers and therefore have more life experiences to rely on for self-efficacy. This is true with this sample, 11 of the 14 fall in the thirty to fifty year age range allowing time for more opportunities for mastery experiences. Bandura's (1977) social cognitive theory states that mastery experiences are one the strongest influences on self-efficacy. The remaining three groups consist of those who reported "few", "some", and "many" opportunities and have classroom management efficacy scores that improve with more opportunities.

Bandura (1997) points out that pre-service teachers are more likely to adopt what they see modeled if it is modeled by other teachers who are solving the same type of problems they will encounter in the classroom. Studies conducted by Burke and Day (1986) demonstrated that masterly modeling proved to be a superior method to get preservice teachers to become proficient in the skills being modeled. Teachers who have opportunities to see multiple strategies modeled by a variety of people seem more likely to have higher personal teaching efficacy.

Usually, more opportunities teachers have to see modeling accompanies higher personal teaching efficacy scores. Bandura (1997) says that both masterly and coping (p.99) modeling are beneficial to novice teachers. Induction teachers need to observe master teachers who "make teaching look easy" but they also need to observe teachers who are still learning how to cope with challenging and difficult situations. Seeing others persevere through a tough situation especially if it is similar to what the induction teacher is feeling and experiencing may benefit the induction teacher.

Most respondents reported that some type of feedback was one factor that influenced their perceptions of their own personal teaching efficacy. Forty-four based it on how effective they were on student outcomes, 12 based it on the dynamics of their classes and

how they managed them, 26 measured effectiveness on their own opinion of their abilities, 15 said their mentor influenced their teaching styles, and four based their effectiveness on feedback from evaluators. The seventeen respondents not yet sure of their own effectiveness based their perceptions on their years of teaching experience.

Surprises

The biggest surprise in this study was the lack of response. The survey was sent out to 745 Missouri teachers and only 125 responded. Forty-four were undeliverable, and 26 started the survey and then opted out. The researcher expected teachers to be more willing to complete an anonymous survey. Part of the problem could be that the survey was administered in the fall instead of in the spring and the beginning of school is a hectic time. The fall timing could also account for the lack of response from any teachers who did not return to the classroom. The lack of willingness to return the original survey lowered the response rate to 21%. The data still fell into normal distribution curves, which is good, but some of the sample sizes were smaller than desired. It is recommended that larger sample sizes be used in future research. Perhaps running the research in conjunction with various teacher certification programs would be a more effective method for obtaining larger samples for each certification type.

A second surprise was how difficult it is to write good essay questions to prevent misunderstanding of what is being asked and obtain answers that fit the criterion. The questions on certification type should have been multiple-choice style, identifying respondent gender would have been useful and asking age range rather than year of high school graduation would have made more sense.

Conclusions

Teacher self-efficacy is a complicated construct composed of multiple layers and interlacing connections. Many factors enter into its development and it is composed of a variety of pieces. Instructional efficacy, classroom management efficacy, and student engagement efficacy were the three components of personal teaching efficacy addressed in this research. Unlike some professions, education is different each day because teachers deal with a unique set of circumstances on a daily basis. The goal of the study was to determine if the pathway to certification has a relationship to personal teaching efficacy, if there a relationship between years of experience and personal teaching efficacy and what characteristics best explain personal teaching efficacy from the perspective of the teacher. The evidence collected says there is no significant relationship between pathway to certification and personal teaching efficacy but there is a significant relationship between years of experience and personal teaching efficacy and there is also a significant relationship between opportunities to observe modeling and classroom management efficacy.

The relationship between modeling and classroom management was flavored by the makeup of the sample group that had no opportunities to see modeling during their certification process. It was a small sample ($n = 14$) consisting of predominately alternatively certified teachers who have significantly less opportunities to observe modeling, who are older and have more life experiences, and the majority of this sample have over 3 years of teaching experience (71.4%). All of these factors working together indicate this finding supports the significant relationship found between years of experience and personal teaching efficacy rather than the relationship between opportunities to see modeling and efficacy.

Perhaps the more important discovery was the importance years of experience have on personal teaching efficacy. Regardless of the pathway to certification, all induction teachers have to face the same situations in their daily venture into the classroom. I

recommend that mentoring experiences for induction teachers be improved to provide time for more opportunities to observe master teachers during both preservice and induction years, and time to reflect and internalize what they see. As the introduction to the book *Preparing Teachers for a Changing World* (Darling-Hammond & Bransford, Eds., 2005) says, to better prepare teachers for the classroom, their learning needs to be organized around actual situations they will probably encounter, to “provide time to practice and reflect on teaching while enrolled in their preparation programs” (p. 375), and help them develop the ability to think about their own thinking. I recommend we give “attention to the factors that support the development of a strong sense of efficacy among preservice and novice teachers.” (Woolfolk Hoy, 2000, p.6)

To further support the induction teacher I recommend some changes be made in the first years of experience. Instead of placing the novice teacher in a classroom with a full work load of classes and a mentor on the side, the beginning teacher needs to have a lighter teaching load the first year with two plan periods each day and easy access to their mentor. I recommend the master teacher mentor and the novice teacher are provided with one plan period in common and weekly meetings as a mandatory part of the schedule. This extra plan will provide the novice teacher opportunity to reflect on what they have been experiencing (mastery experiences) and reflect on their own emotional state of mind (physiological and emotional states), opportunities to observe other teachers (vicarious experiences) and interact with their mentor (social persuasions) on a regular and frequent basis. According to Bandura’s (1995) social cognitive theory these four factors are essential in the makeup of personal teaching efficacy and a person’s self-efficacy beliefs “regulate human function” (Bandura, 1995, p. 5). Investing quality time and money into induction teachers could very

well be the factor that decreases the number leaving the profession in the first five years and improve student achievement.

These findings are especially important in the field of science education since science is the only discipline where teachers must have a certification or endorsement for the course they plan on teaching. Teachers with a certification to teach math or history can teach any course offered at the high school level; this is not the case in science. In science the teacher is prepared to teach a specific area of a science such as biology, chemistry or physics with a major in only one of these sciences. In the case of “unified science” the teacher is prepared to teach introductory levels of all of the sciences. Each method has inherent problems. A major in biology doesn’t prepare a teacher to teach chemistry, physics or earth science. The unified science doesn’t prepare the teacher to teach any science in depth. In addition to the requirement for specific content endorsements, induction science teachers not only have to grasp the complexity of teaching in the typical classroom setting but must also develop competence in managing students in a laboratory setting, which is a much less structured environment and requires different management techniques. I recommend induction science teachers have opportunities to observe master teachers organizing and conducting laboratory investigations along with traditional classroom teaching. Experience is the key to sustainability and high personal teaching efficacy for these induction teachers.

Recommendations for further research

Any future studies that are conducted need to follow a path analysis that begins with the certification pathway and travels through mentoring experiences, student-teacher interactions, and collective school efficacy, while collecting data on personal teaching efficacy. All of these facets of an efficacious teacher need to be observed over time since years of experience have a significant relationship to personal teacher efficacy.

A longitudinal study of high school science teachers that begins with them entering the teacher certification program and follows them through at least the first five years of experience is recommended. The study should include the TSES instrument along with multiple classroom observations during the times the participants are in a classroom and in the laboratory, a requirement that the participants keep a reflective journal on how the students learn, how their teaching practice is developing, how effective their methods are for all learners, and the effect their mentor experience has on their understanding and effectiveness of teaching. Data should be collected using the TSES along with observations and student achievement scores, using pre- post- testing instruments, to aid in determining teacher effectiveness.

A comparison study between teachers who are given an extra plan and access to their mentor for that first year and those teachers who are given a full teaching load and are responsible to meet with their mentor on their one plan hour (or before/after school hours) to determine how effective extra plan time is or isn't for personal teaching efficacy is also recommended. Since socialization into the collective community plays a key role in the personal teaching efficacy of teachers (Woolfolk Hoy, 2000) it would also be beneficial to incorporate a longitudinal study looking at personal teaching efficacy and collective school efficacy simultaneously.

It would also be interesting to do a data analysis of Core Data at the state and National level, perhaps even international level, looking at teachers who have been in the profession for more than five years to determine if those with low efficacy "remove" themselves from the educational area because they are not a "good fit". Perhaps another study of data could look at longevity in teaching. How many people enter a career and expect to remain in that one career for a lifetime? There are still more questions than answers.

Concluding Remarks

This study has provided a new piece to the puzzle we know as personal teaching efficacy, by looking at personal teaching efficacy and the three subgroups: student engagement efficacy, instructional strategies efficacy, and classroom management efficacy. Bandura's social learning theory brings together the interactions between cognitive, behavioral and environmental factors that make up the construct of teacher self-efficacy. It seems unusual that what we think about how effective we are in some part determines just how effective we really are. It was found that mastery experiences, vicarious experiences, verbal persuasions, and the physiological and emotional state of the participants do have an effect on perceptions of self-efficacy and once these perceptions form they are hard to alter. The number of years of experience an induction teacher has significantly influences their perceptions of their overall self-efficacy in relation to teaching, their perceptions of their efficacy in the realm of student engagement and having the instructional strategies necessary to communicate the concepts they are striving to teach.

This has been a long journey of discovery, anticipation and discouragement and, in the end, of success. Did I find out what I set out to discover? No, but I did find out that the community known as "school" has the profound ability to help form the next generation of educators who will mold the next generation and so on. As a seasoned, master teacher I have the responsibility to constantly reflect and improve on my teaching so as to provide a quality model for the newest teachers to observe and to continue to provide every student who enters my room the hope of a quality education. Perhaps teachers need to have the mindset of the Little Engine That Could (Jacobs, 1910): "I think I can, I think I can" when facing the "mountain" of being an effective, efficacious teacher in today's society.

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Appendix A

Teacher's sense of efficacy scale (long form) Tschannen-Moran & Woolfolk Hoy

Teacher Beliefs	How much can you do?												
Directions: This questionnaire is designed to help us gain a better understanding of the kinds of things that create difficulties for teachers in their school activities. Please indicate your opinion about each of the statements below. Your answers are confidential.	Nothing			Very Little			Some			Quite A Bit			A Great Deal
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)				
1. How much can you do to get through to the most difficult students?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)				
2. How much can you do to help your students think critically?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)				
3. How much can you do to control disruptive behavior in the classroom?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)				
4. How much can you do to motivate students who show low interest in school work?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)				
5. To what extent can you make your expectations clear about student behavior?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)				
6. How much can you do to get students to believe they can do well in school work?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)				
7. How well can you respond to difficult questions from your students?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)				
8. How well can you establish routines to keep activities running smoothly?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)				
9. How much can you do to help your students' value learning?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)				
10. How much can you gauge student comprehension of what you have taught?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)				
11. To what extent can you craft good questions for your students?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)				
12. How much can you do to foster student creativity?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)				
13. How much can you do to get children to follow classroom rules?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)				
14. How much can you do to improve the understanding of a student who is failing?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)				
15. How much can you do to calm a student who is disruptive or noisy?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)				
16. How well can you establish a classroom management system with each group of students?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)				
17. How much can you do to adjust your lessons to the proper level for individual students?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)				
18. How much can you use a variety of assessment strategies?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)				
19. How well can you keep a few problem students from ruining an entire lesson?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)				
20. To what extent can you provide an alternative explanation or example when students are confused?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)				
21. How well can you respond to defiant students?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)				
22. How much can you assist families in helping their children do well in school?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)				
23. How well can you implement alternative strategies in your classroom?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)				
24. How well can you provide appropriate challenges for very capable students?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)				

Tschannen-Moran & Woolfolk Hoy. (2001). Teacher Self-efficacy Scale. Created at Ohio State and used with permission.

Appendix B

Bandura's instrument (unpublished): Teacher Self-Efficacy Scale

(Woolfolk, A., 2010. downloaded from <http://people.ehe.ohio-state.edu/ahoy/research/instruments/>)

This questionnaire is designed to help us gain a better understanding of the kinds of things that create difficulties for teachers in their school activities. Please indicate your opinions about each of the statements below by circling the appropriate number. Your answers will be kept strictly confidential and will not be identified by name.

Efficacy to Influence Decision making

How much can you influence the decisions that are made in the school?

1	2	3	4	5	6	7	8	9
Nothing		Very Little		Some Influence		Quite a Bit		A Great Deal

How much can you express your views freely on important school matters?

1	2	3	4	5	6	7	8	9
Nothing		Very Little		Some Influence		Quite a Bit		A Great Deal

Efficacy to Influence School Resources

How much can you do to get the instructional material and equipment you need?

1	2	3	4	5	6	7	8	9
Nothing		Very Little		Some Influence		Quite a Bit		A Great Deal

Instructional Self-Efficacy

How much can you do to influence the class sizes in your school?

1	2	3	4	5	6	7	8	9
Nothing		Very Little		Some Influence		Quite a Bit		A Great Deal

How much can you do to get through to the most difficult students?

1	2	3	4	5	6	7	8	9
Nothing		Very Little		Some Influence		Quite a Bit		A Great Deal

How much can you do to promote learning when there is lack of support from the home?

1	2	3	4	5	6	7	8	9
Nothing		Very Little		Some Influence		Quite a Bit		A Great Deal

How much can you do to keep student on task on difficult assignments?

1	2	3	4	5	6	7	8	9
Nothing		Very Little		Some Influence		Quite a Bit		A Great Deal

How much can you do to increase students' memory of what they have been taught in previous lessons?

1	2	3	4	5	6	7	8	9
Nothing		Very Little		Some Influence		Quite a Bit		A Great Deal

How much can you do to motivate students who show low interest in schoolwork?

1	2	3	4	5	6	7	8	9
Nothing		Very Little		Some Influence		Quite a Bit		A Great Deal

How much can you do to get students to work together?

1	2	3	4	5	6	7	8	9
Nothing		Very Little		Some Influence		Quite a Bit		A Great Deal

How much can you do to overcome the influence of adverse community conditions on students' learning?

1	2	3	4	5	6	7	8	9
Nothing		Very Little		Some Influence		Quite a Bit		A Great Deal

How much can you do to get children to do their homework?

1	2	3	4	5	6	7	8	9
Nothing		Very Little		Some Influence		Quite a Bit		A Great Deal

Disciplinary Self-Efficacy

How much can you do to get children to follow classroom rules?

1	2	3	4	5	6	7	8	9
Nothing		Very Little		Some Influence		Quite a Bit		A Great Deal

How much can you do to control disruptive behavior in the classroom?

1	2	3	4	5	6	7	8	9
Nothing		Very Little		Some Influence		Quite a Bit		A Great Deal

How much can you do to prevent problem behavior on the school grounds?

1	2	3	4	5	6	7	8	9
Nothing		Very Little		Some Influence		Quite a Bit		A Great Deal

Efficacy to Enlist Parental Involvement

How much can you do to get parents to become involved in school activities?

1	2	3	4	5	6	7	8	9
Nothing		Very Little		Some Influence		Quite a Bit		A Great Deal

How much can you assist parents in helping their children do well in school?

1	2	3	4	5	6	7	8	9
Nothing		Very Little		Some Influence		Quite a Bit		A Great Deal

How much can you do to make parents feel comfortable coming to school?

1	2	3	4	5	6	7	8	9
Nothing		Very Little		Some Influence		Quite a Bit		A Great Deal

Efficacy to Enlist Community Involvement

How much can you do to get community groups involved in working with the schools?

1	2	3	4	5	6	7	8	9
Nothing		Very Little		Some Influence		Quite a Bit		A Great Deal

How much can you do to get churches involved in working with the school?

1	2	3	4	5	6	7	8	9
Nothing		Very Little		Some Influence		Quite a Bit		A Great Deal

How much can you do to get businesses involved in working with the school?

1	2	3	4	5	6	7	8	9
Nothing		Very Little		Some Influence		Quite a Bit		A Great Deal

How much can you do to get local colleges and universities involved in working with the school?

1	2	3	4	5	6	7	8	9
Nothing		Very Little		Some Influence		Quite a Bit		A Great Deal

Efficacy to Create a Positive School Climate

How much can you do to make the school a safe place?

1	2	3	4	5	6	7	8	9
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How much can you do to make students enjoy coming to school?

1	2	3	4	5	6	7	8	9
Nothing		Very Little		Some Influence		Quite a Bit		A Great Deal

Appendix C

Summary of TSES Tschannen-Moran & Woolfolk Hoy

	Study 1	Study 2	Study 3
Sample All were teachers	224 participants 146 preservice 124 female/22 male age: 18-47 yrs. 78 in-service 43 female/35 male) age 20-56 yrs. ethnicity 184 European Am 4 Latinos 3 Asian Am 10 other	217 participants 70 preservice 49 female/20male age:20-46 147 in-service 94 female/53 male age:22-62 3 no status given ethnicity 172 European am 22 African Am 6 Latinos 6 Asian Am 8 other	410 participants 103 preservice 84 female/15 male age 18-52 255 in-service 170 female/ 84 male/ 1 no indication age:21-57 ethnicity 332 European Am 38 African Am 3 Latinos 7 Asian Am/Pacific Islanders 10 other
Analysis	Used 9-point scale Rated importance 4-point scale	Used 9 point scale	Added items based on Emmer's teacher for classroom management scale & needs of capable students Used 9 point scale
	Principal-axis factoring yielded 10 factors with eigenvalue>1 (57.2% of total variance) 1 st factor eigenvalue of 20.7 (39.9 % of variance) 31 items (loading range 0.62- 0.78 Plus 1 item 0.595(Kept/on motivation)	Principal-axis factoring yielded 8 factors with eigenvalues > 1 (63% of Variance) Scree test: 2-3 factors Efficacy for student engagement (8 items) Efficacy for instructional strategies (7 items) efficacy for classroom management (3 items)	Principal-axis factoring with varimax rotation yielded 4 factors (58% of variance) Scree test: same 3 factors Efficacy for student engagement (12 items) Efficacy for instructional strategies (15 items) efficacy for classroom management (9 items) Reduced scale by selecting 8 items with highest loading for each factor Chose top 4 loading items for each factor to generate a 12 item form
Results	Selected 32 of original items	Reduced to 18 items with 3 factors Reliabilities: 0.82: engagement 0.81: instruction 0.71: management Good validities Weakness in management factor—3 rd study	Results—Reliability 12 item 24 item Instruction 0.91 0.86 Management 0.90 0.86 Engagement 0.87 0.81 Construct Validity Participant also took: <u>Rand:</u> :r = 0.35 & 0.28 p<0.01 <u>PTE:</u> r = 0.48 p< 0.01 <u>GTE:</u> r = r 0.30 p<0.01

Tschannen-Moran, M., Woolfolk Hoy, A., & Hoy, W.K. (1998). Teacher efficacy: Its meaning and measure. *Review of Educational Research*, (68), 202-248.

Appendix D:

Teacher Efficacy Scale: Gibson & Dembo

TEACHER EFFICACY SCALE						
Directions: Please indicate the degree to which you agree or disagree with Each statement below by circling the appropriate numeral to the right Of each statement.	Strongly disagree	Moderately disagree	Disagree slightly	Agree slightly more	Moderately agree	Strongly agree
1. When a student does better than usual, many times it is because I exerted a little extra effort.	(1)	(2)	(3)	(4)	(5)	(6)
2. The hours in my class have little influence on students compared to the influence of their home environment.	(1)	(2)	(3)	(4)	(5)	(6)
3. If parents comment to me that their child behaves much better at school than he/she does at home, it would probably be because I have some specific techniques of managing his/her behavior which they may lack.	(1)	(2)	(3)	(4)	(5)	(6)
4. The amount that a student can learn is primarily related to family background.	(1)	(2)	(3)	(4)	(5)	(6)
5. If a teacher has adequate skills and motivation, she/he can get through to the most difficult student.	(1)	(2)	(3)	(4)	(5)	(6)
6. If students aren't disciplined at home, they aren't likely to accept any discipline.	(1)	(2)	(3)	(4)	(5)	(6)
7. I have enough training to deal with almost any learning problem.	(1)	(2)	(3)	(4)	(5)	(6)
8. My teacher training program and /or experiences has given me the necessary skills to be an affective teacher.	(1)	(2)	(3)	(4)	(5)	(6)
9. Many teachers are stymied in their attempts to help students by lack of support from the community.	(1)	(2)	(3)	(4)	(5)	(6)
10. Some student need to be placed in slower groups so they are not subjected to unrealistic expectations.	(1)	(2)	(3)	(4)	(5)	(6)
11. Individual difference among teachers account for the wide variations in student achievement.	(1)	(2)	(3)	(4)	(5)	(6)
12. When a student is having difficulty with an assignment, I am usually able to adjust it to his/her level.	(1)	(2)	(3)	(4)	(5)	(6)
13. If one of my new students cannot remain on task for a particular assignment, there is little that I could do to increase his/her attention until he/she is ready.	(1)	(2)	(3)	(4)	(5)	(6)
14. When a student gets a better grade than he usually gets, it is usually because I found better ways of teaching that student.	(1)	(2)	(3)	(4)	(5)	(6)
15. When I really try, I can get through to most difficult students.	(1)	(2)	(3)	(4)	(5)	(6)
16. A teacher is very limited in what he/she can achieve because a student's home environment is a large influence on his/her achievement.	(1)	(2)	(3)	(4)	(5)	(6)
17. Teachers are not a very powerful influence on student achievement when all factors are considered.	(1)	(2)	(3)	(4)	(5)	(6)
18. If students are particularly disruptive one day, I ask myself what I have been doing differently.	(1)	(2)	(3)	(4)	(5)	(6)
19. When the grades of my students improve it is usually because I found more effective teaching approaches.	(1)	(2)	(3)	(4)	(5)	(6)
20. If my principal suggested that I change some of my class curriculum, I would feel confident that I have the necessary skills to implement the unfamiliar curriculum.	(1)	(2)	(3)	(4)	(5)	(6)
21. If a student masters a new math concept quickly; this might be because I knew the necessary steps in teaching that concept.	(1)	(2)	(3)	(4)	(5)	(6)

22. Parent conferences can help a teacher judge how much to expect from a student by giving the teacher an idea of the parents' values toward education, discipline, etc.	(1)	(2)	(3)	(4)	(5)	(6)
23. If parents would do more with their children, I could do more.	(1)	(2)	(3)	(4)	(5)	(6)
24. If a student did not remember information I gave in a previous lesson, I would know how to increase his/her retention in the next lesson.	(1)	(2)	(3)	(4)	(5)	(6)
25. If a student in my class becomes disruptive and noisy, I feel assured that I know some techniques to redirect him quickly.	(1)	(2)	(3)	(4)	(5)	(6)
26. School rules and policies hinder my doing the job I was hired to do.	(1)	(2)	(3)	(4)	(5)	(6)
27. The influences of a student's home experiences can be overcome by good teaching	(1)	(2)	(3)	(4)	(5)	(6)
28. When a child progresses after being placed in a slower group, it is usually because the teacher has had a chance to give him/her extra attention.	(1)	(2)	(3)	(4)	(5)	(6)
29. If one of my students couldn't do a class assignment, I would be able to accurately assess whether the assignment was at the correct level of difficulty.	(1)	(2)	(3)	(4)	(5)	(6)
30. Even a teacher with good teaching abilities may not reach many students.	(1)	(2)	(3)	(4)	(5)	(6)

Gibson, S. & Dembo, M. (1984). *Teacher efficacy: A construct validation.* Journal of Educational Psychology. 76(4), 569-582.

Appendix E
Summary of Findings TES Gibson & Dembo

	Pilot Study	Phase 1	Phase 2: Multitrait-Multimethod	Phase 3: Classroom Observations
Sample All were teachers	90 teachers	2 Districts-13 schools (K- 6) 208 teachers experience 20%-1-5 yrs. 25%-6-10 yrs. 23.7%-11-20 16.3%-21.39 yrs. 75% female	55 teachers enrolled in graduate courses	8 teachers (Phase 1) 4 high efficient 4 low efficient from 2 /13 schools
Analysis	Principal factor analysis Eliminate items with poor variability Keep items that loaded on 2 factors Clarify ambiguities	Principal factor analysis Squared multiple correlation matrix Iteration to improve estimates Catell's screen test Oblique & orthogonal rotations-to compare item loadings and correlation Cronbach's alpha coefficients	Analyzed used closed and open ended measurement Multitrait-Multimethod matrix Correlations of variables within & between methods	used mean and SD for time allocation and teacher persistence one tailed t-tests—teacher as unit of analysis
Result	30-items Likert format	2 factors moderately correlated ($r = -.19$) Significance of factor loading used $\geq .45$ Cronbach's alpha coefficients PTE—0.78 TEF—0.75 total 16 items—0.79 16 items gave acceptable reliability so only those were used.	TE from open & closed additive scale—correlation of 0.42 ($p < .001$) All 3 traits significant (0.05)—0.30, 0.39, & 0.42	Significant diff in small group time $t(6) = 2.23$ $p < 0.05$ Low efficacy: almost half time in small group High efficiency: 28% lack of persistence $t(6) = 3.29$ $p < 0.01$

Gibson, S. & Dembo, M. (1984). Teacher efficacy: A construct validation. *Journal of Educational Psychology*, 76(4), 569-582.

Appendix F



Copy of email to accompany
survey

Division of Teaching and Learning

One University Blvd.
St. Louis, Missouri 63121-4499
Telephone: 314-516-5951
E-mail: lg59a@umsl.edu

HSC Approval Number 241573-1

Dear High School Science Teacher,

My name is Linda Gaither and I am working on my PhD at the University of Missouri-St. Louis. For my research I am studying the effects of beginning teachers' beliefs about their own teaching ability and the effect of those beliefs on persistence, retention and instructional strategies. I obtained your name and school address from the Department of Elementary and Secondary Education Core Data.

I am inviting you to participate by completing the survey I have created on Survey Monkey. You will remain anonymous and this survey should not take more than 20-30 minutes of your time. Please follow the link below and complete my survey. I am collecting data for a 3 week period from August 1, 2011 to August 20, 2011. I would also like to do a few live interviews with any participants who are willing; however the live interview is not a necessary part of the survey.

Everyone who completes the survey will have the opportunity to submit their name for a \$50.00 online Best Buy® Certificate.

Thank you for helping.

Linda Gaither

Link: <https://www.surveymonkey.com/s/6C3C9SS>

Appendix G



Division of Teaching and Learning

This is the informed consent form that is a part of the online survey & handed out to Focus Group participants

One University Blvd.
St. Louis, Missouri 63121-4499
Telephone: 314-516-5951
E-mail: lg59a@umsl.edu

HSC Approval Number 241573-1

Informed Consent for Participation in Research Activities

Comparison of Alternately Certified and Traditionally Certified High School Science Teachers' Perceptions of Self-Efficacy during the Induction Period

Principal Investigator: Linda Gaither

PI's Phone Number: 314-277-9838

You are invited to participate in a research study conducted by Linda Gaither/ and Dr. Gayle Wilkinson, Associate Professor. The purpose of this research is to determine the effects of induction teachers' beliefs about their own teaching ability and the effect of those beliefs on, retention, persistence and instructional strategies when comparing traditionally and alternately certified teachers.

Your participation will involve participating in this anonymous online survey that contains 1 teacher belief instrument and some demographic and historical questions. The original email will also ask if you are willing to participate in an additional live interview, if you are you just send me an email with your name and phone number, then I will contact you. Approximately 700 may be involved in the on line survey and up to but not more than 20 in the in personal interviews for this research. The amount of time involved in your participation will be approximately 20-30 minutes to complete the online survey and another 30 minutes if you choose to participate in the interview portion. There are no anticipated risks associated with this research. There are no direct benefits for you participating in this study. However, your participation will contribute to the knowledge about teacher beliefs and persistence, retention and instructional strategies and may help society. After completion of the survey you will be given the opportunity to enter a drawing for a \$50.00 online Best Buy certificate.

Your participation is voluntary and you may choose not to participate in this research study or to withdraw your consent at any time. You may choose not to answer any questions that you do not want to answer. You will NOT be penalized in any way should you choose not to participate or to withdraw.

By agreeing to participate, you understand and agree that your data may be shared with other researchers and educators in the form of presentations and/or publications. In all cases, your identity will not be revealed. In rare instances, a researcher's study must undergo an audit or program evaluation by an oversight agency (such as the Office for Human Research Protection). That agency would be required to maintain the confidentiality of your data. In addition, all data will be stored on a password-protected computer and/or in a locked office.

If you have any questions or concerns regarding this study, or if any problems arise, you may call the Investigator, Linda Gaither (314-277-9838), or Dr. Gayle Wilkinson, Associate Professor (314-516-5951). You may also ask questions or state concerns regarding your rights as a research participant to the Office of Research Administration, at 314- 516-5897.

I have read this consent form and have been given the opportunity to ask questions. By completing this survey and submitting it, I consent to my participation in the research described above.

Appendix H

Efficacy Instruments for Study

Typed version of survey constructed on Survey Monkey

1. Personal Appraisal Inventory (Teacher Beliefs)
2. Demographics and questions

Teacher Beliefs	How much can you do?								
	Nothing		Very Little		Some Influence		Quite A Bit		A Great Deal
Directions: This questionnaire is designed to help us gain a better understanding of the kinds of things that create difficulties for teachers in their school activities. Please indicate your opinion about each of the statements below. Your answers are confidential.									
1. How much can you do to get through to the most difficult students?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
2. How much can you do to help your students think critically?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
3. How much can you do to control disruptive behavior in the classroom?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
4. How much can you do to motivate students who show low interest in science?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
5. To what extent can you make your expectations clear about student behavior?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
6. How much can you do to get students to believe they can do well in science?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
7. How well can you respond to difficult questions from your students?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
8. How well can you establish routines to keep activities running smoothly?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
9. How much can you do to help your students' value learning?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
10. How much can you gauge student comprehension of what you have taught?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
11. To what extent can you craft good question for your students?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
12. How much can you do to foster student creativity?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
13. How much can you do to get students to follow classroom rules?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
14. How much can you do to improve the understanding of a student who is failing?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
15. How much can you do to calm a student who is disruptive or noisy?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
16. How well can you establish a classroom management system with each group of students?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
17. How much can you do to adjust your lessons to the proper level for individual students?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
18. How much can you use a variety of assessment strategies?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
19. How well can you keep a few problem students from ruining an entire lesson?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
20. To what extent can you provide an alternative explanation or example when students are confused?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
21. How well can you respond to defiant students?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
22. How much can you assist families in helping their children do well in school?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
23. How well can you implement alternative strategies in your classroom?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
24. How well can you provide appropriate challenges for very capable students?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

(Woolfolk, A., 2010. downloaded from <http://people.ehe.ohio-state.edu/ahoy/research/instruments/>)

Please answer each question to provide knowledge on your educational background.

What was your major for your Bachelor's?

What was your minor?

What was your undergraduate GPA?

Below 2.0

2.1 to 2.5

2.6 to 3.0

3.1 to 3.5

3.6 to 4.0

Above 4.0

At what university or college did you obtain your Bachelor's degree?

Do you have your Master's? (This is a yes no answer)

If they choose "yes" they go to:

What was your area of focus for your Master's?

Do you have your Specialist's or Doctorate?

If they choose "no" they go on to the next page

The questions in this section will provide a picture of your teaching experience.

How many years have you been teaching?

1

2

3

4

5

More than 5

2. Which of the following best describes the school where you are currently teaching? Pick one from each row.

Urban

Suburban

Rural

Public

Private

3. Which best describes the size of the student population at the school where you currently teach?

- | | |
|---------------------------------------|---|
| <input type="checkbox"/> 500 or less | <input type="checkbox"/> 1501 to 2000 |
| <input type="checkbox"/> 501 to 1000 | <input type="checkbox"/> 2001 to 2500 |
| <input type="checkbox"/> 1001 to 1500 | <input type="checkbox"/> Larger than 2500 |

5. Are you returning to the classroom this fall?

- Yes No

Why or why not?

New page

What type of teaching certificate do you currently hold?

American Board for Certification of Teacher Excellence (ABCTE)

Traditional Certification through college of education

Alternative Certification through a college or university

Teach for America

Troops to Teachers

Other (please specify)

Did you take the Praxis? Yes or No answer

If you said yes to question 2, please state what version of the Praxis you took.

What subject areas are you certified to teach?

Are you teaching within your areas of certification? Yes or No answer

New Page

What year did you graduate from high school?

What size high school did you attend?

- 500 or less
- 1501 to 2000
- 501 to 1000
- 2001 to 2500
- 1001 to 1500
- Larger than 2500

3. Which of the following best describes the school where you attended? Choose one from each row.

- Urban
- Suburban
- Rural
- Public
- Private

Do you have family members who are (or were) teachers? Yes or No answer

If they choose “Yes” they go to:

What did you learn about the profession of teaching from your relative?

New page

These short answer questions deal with classroom organization.

What opportunities did you have while you were earning your teaching certificate to see various teaching techniques modeled?

Explain how you manage your classroom. What strategies do you use?

What strategies work and what do not. Explain the difference.

What do you see as your role in each student being successful in your class?

New Page

This is the final section and focuses on your professional views. (Thank you for persevering to the end)

What are your feelings about teaching as a career?

What are your perceptions of your effectiveness? Is teaching a good fit for you?

What factors (mentor, administration, policies, class size, etc.) during your teaching career have most influenced your outlook on education as a career? Please elaborate.

Please share any other information you feel is relevant to your beliefs about teaching. Thank you for your help.

Descriptive Text

Thank you for participating in this survey. To be entered in the drawing for the \$50.00 online

Best Buy certificate please send your name and email address to Linda Gaither at:

lndgthr1@gmail.com

Appendix I

Scoring guide

Teacher Sense of Efficacy Scale

Construct Validity:

Correlation of TSES to other existing measures of teacher efficacy

Stronger for assessing personal teaching efficacy than general teaching or outcome efficacy

Rand items: $r = 0.18 \text{ \& } 0.53 \text{ } p < 0.01$

PTE (or just TE): $r = 0.64 \text{ } p < 0.01$

GTE: $r = 0.16 \text{ } p < 0.01$ (Least successful in capturing essence of efficacy)

Factor Analysis: Research says three moderately correlated factors:

Efficacy in Student engagement, Efficacy in instructional strategies, Efficacy in classroom management

Subscale scores: Compute the unweighted means of the items that load on each factor

Efficacy in Student engagement: Items: 1, 2, 4, 6, 9, 12, 14, 22

Efficacy in instructional strategies Items: 7, 10, 11, 17, 18, 20, 23, 24

Efficacy in classroom management Items: 3, 5, 8, 13, 15, 16, 19, 21

Reliabilities:

	Mean	SD	alpha
TSES	7.1	.94	.94
Engagement	7.3	1.1	.87
Instruction	7.3	1.1	.91
Management	6.7	1.1	.90

Appendix J

Code Book Teacher Self Efficacy: Education as a Career, Classroom Management, Student Success

Category	Sub-category	Dimensions	Representative Quotes
Education as a Career	Mindset	Job $\leftarrow \rightarrow$ Calling	#8 Q7 "I will be physically, mentally, and emotionally worn out LONG before retirement, but will be sad to leave when I go" #33 Q2 "Teaching is a gift to help others along in their careers" #49 Q 7 "Overall, it is a rewarding career" #71 Q2 "Because it is a job" #58 Q 7 "I believe if it is called a career it needs to be properly funded." #105 Q2 "I was offered a contract"
		Ineffective $\leftarrow \rightarrow$ Effective	#10 Q 8 "I feel I make a difference in student achievement: #74 Q 8 "I was not as effective this year as I would like to be, but since it was my first year I feel that is normal"
		Self-doubt $\leftarrow \rightarrow$ Self-confident	#11 Q8 "Sometimes I feel very intrinsically rewarded" #88 Q 7 "I feel that teaching is not a respected career anymore" #114 Q 8 "I sometimes wonder if I am actually a good teacher. I am always my own worst critic"

Experience	Not prepared-prepared	<p>#84 Q7 “Even in same day I will feel overwhelmed and frustrated and happy with progress at different times. I feel like the preparation most teacher get is inadequate prior to entering the classroom, whether a traditional or nontrad (nontraditional) certification”</p> <p>#33 Q 3 “I had really excellent college professors and I try to model after them in my own classroom because they had very effective methods for student retention of material.”</p>
	Mentor waste of time ← → Learned from mentor	<p>#4 Q9 “It did not help.”</p> <p>#105 Q 9 “My mentoring experience was a positive one. I had a mentor that took lots of time with me. We had long talks about things frequently that helped me. Positive experience.”</p>
	Improving ← → Good at it	<p>#76 Q 8 “I improve every year that I teach. I believe I am effective because of the information my students seem to know about the subject matter at the end of the year.”</p> <p>#56 Q 8 “I am a very effective teacher. It would be a shame for me and for my community if I were not a teacher.”</p> <p>#26 Q8 “Every year I get better. As I get better my students get better”</p>
	Failure ← → Successful	<p>#10 Q 8 “I feel I make a difference in student achievement, it fits my personality.”</p> <p>#62 Q1 “I like teaching so far and feel like I’m getting better at it.”</p> <p>#66 Q 8 “I can do it for a little while longer.”</p>

	People	Current students ← → Former students	#57 Q10 “I would say that my students have had the most influence on my outlook for education as a career. I have built strong relationships with my students that have brought out a respect for me and a desire to learn more in my class.” #6 Q10 “prior students have come back and thanked me for expecting so much of them and helping them learn”
		Non-Supportive← → Supportive	#60 Q10 “see someone within my department who has taught for 43 years and is still doing it and the students still enjoy is something to look forward too” #71 Q10 “tenured staff in my department, in general have helped me understand that I may not want to be in education forever” #72 Q10 “My principal is very upbeat, positive, and patient. His example is hard to beat. He has demonstrated this through many years as an educator in this school district. He has helped me to overcome obstacles and challenges which might have been game-changers for me otherwise”
Category	Sub-Category	Dimensions	Examples
Classroom Management	Make-up of class	Lopsided male female← → Balanced male female	#30 Q5 “If you have a highly social class additional measures have to be taken to keep students on task” #73 Q 5 “The difference is the students and dynamic of the individuals in a class.”
		Small class size ← → large class size	#23 Q 5 “in a larger classroom I had trouble maintain order because I am used to a small close-knit group of alternative students versus 25 kids” #118 Q 5 “it depends whether the class is in the morning or

			<p>afternoon and the content you are teaching. It also depends on the combination of students in the class as well as the number of students in the classroom”</p> <p>#65 Q 5 “Some strategies are not needed when you have only 2 students in a class.”</p>
		9 th graders ← → 12 th graders	<p>#1Q5 Upper classmen and freshmen respond to the strategies very differently”</p> <p>#77 Q 5 “My freshman need a lot more structure.”</p>
		Fall ← → Spring	<p>#63 Q5 “classes that are too well –behaved early on tend to fall apart more often by the end of the year.”</p> <p>#14 Q5 “maybe on different days or different lessons”</p>
		Morning ← → Afternoon	<p>#118 Q 5 “it depends whether the class is in the morning or afternoon and the content you are teaching. It also depends on the combination of students in the class as well as the number of students in the classroom”</p> <p>#116 Q5 “students are sluggish and more passive in the early morning and more keyed up and unsettled at the end of the school day”</p> <p># 2 Q 5 “It depends entirely on the group of students that I have and what hour I have them”</p>

		Required ← → Elective	<p>#85 Q4 “Students who take physics are generally those with few discipline problems”</p> <p>#74 Q5 “taught classes that range from the lowest level to the highest, and the strategies seem to work for both”</p> <p>#116 Q 5 “Honor’s students are more easily managed by the promise or theraat of their grades”</p>
Procedures/ Policy	Haphazard ← → Engaged		<p>#15 Q4 “Keeping students engaged and active”</p> <p>#66 Q4 “I don’t. I have to constantly remind them to be quiet or do what I ask. It takes a lot out of me and constantly grates on my patience”</p> <p>#114 Q4 “I tend to yell at times which I know is not a model teacher trait, but it does tend to get the point across.”</p> <p>#19 Q4 “I consider myself highly entertaining. Students want to be in my room and pay attention to me to see how I will present materials”</p>
		Dictator ← → Community	<p>#36 Q4 “I have a set of rules and do not budge”</p> <p>#4 Q4 “I make it very clear from the outset that if we have a student-teacher conflict , I win”</p> <p>#70 Q 5 “I do community building and set rules and norms for the classroom.”</p>
	Origin of strategies	District generated ← → Teacher generated	<p>#2 Q4 “I follow the school procedures set forth by board”</p> <p>#16 Q4 “I have them write sentences”</p>

			#65 Q 4 “I make my rules and expectations very clear from day one. I will not lower my expectations for students and I push them to excel.”
		Teacher developed ← → Professional Source (Wong, Jones, BIST, etc.)	#14 Q4 “using strategies from books like kagan,” #9 Q4 “I have 3 rules and allow the students to determine their protocol as to learning desires and they also develop the consequences for failure to follow”
Category	Sub-category	Dimensions	Examples
Student Success	Teacher Role	Dispenser of Facts ← → Guide on Side	#5 Q6 “I am the teacher. My job is to teach” #66 Q6 “I am merely a vessel that helps them be exposed to new information and experiences.” #70 Q6 “Facilitator and providing each student with the opportunity to grow.” #30 Q6 “I have to get them to believe and understand that they can learn the materials”
		Rule ← → Make community	#17 Q6 “building of relationship and identifying needs” #102 Q6 “State expectations up front”
		No accountability ← → My Responsibility	#22 Q6 “provide ample opportunities to be successful, yet make it obvious that they are ultimately responsible for their own success or failure” FG #2 “Like if their grade in the class is a failing grade but it’s because they won’t turn anything in, that... no... I don’t think it’s my fault.”

			<p>FG#4 “I think that all their successes and all their failures are dependent upon me as their teacher. I think it’s like my job. Like it is 100% my job to make them succeed. Like that is why I am in the classroom. Realistically the amount of energy I have and the time in the day and in the class and there is a lot going on but it’s still my responsibility.”</p>
	Student Role	Incapable ← → capable	<p>#74 Q6 “if I teach them responsibility and control my classroom, Most students will be able to learn”</p> <p>#15 Q6 “I need to be aware of each student's educational needs so I can alter the way I deliver the educational content so they can be successful”</p> <p>#89 Q6 “every student can succeed at science regardless of their background”</p> <p>#95 Q6 “every student can be successful if they workday and try”</p> <p>#114 Q6 “won’t learn unless they make an effort or choose to learn”</p> <p>#4 Q 6 “I try to understand what conditions are best for each student. I use this information to group students for labs and activities. Some students need to have calm, studious partners.</p>

		Passive Recorder ← → Active Participant	<p>#43 Q6 “an active attempt on their part to learn”</p> <p>#60 Q6 “You can lead a horse to water, but can't make it drink....you can teach a student, but you can't force them to learn.”</p> <p>#106 Q6 “students need to care about their learning and see the value in it. If they don't care, I can't change that”</p> <p>#108 Q6 “Each student is different but can give their personal best each and every day”</p> <p>FG #3 “I make my class so my freshmen if you show up to class and you do what I ask you to do and you try on everything. Even If you don't understand it you'll pass my class. They're freshmen.”</p>
Category	Dimensions	Cert Pathway	Representative Quotes
See Modeling	Many←→None	ABCTE	#1 Q 3 “None. I have never taught in a classroom until I had my own room”
		Alt-Other	#56 Q3 “None. Doctoral route has no classroom experience before teaching. I was never even a TA in grad school”
		T	# 54 Q 3 “We had tons. We were in the field in our second year and was able to visit numerous classrooms and see numerous teaching strategies.”
		Alt-College	#4 Q3 “Virtually none.”
		Alt.-College	#10 Q3 “many required hours of shadowing”
	Preservice←→Classroom Teacher	T	#51 Q3 “I went to many different high school science classes and observed several times. I was asked to make reports of the observations. I was also in a full semester of student teaching”
		ABCTE	#72 Q3 “Teachers Visiting Teachers' Program w/in the school "Survivor" P/D program for beginning teachers

			Substitute teacher for several years”
		ABCTE	#122 Q3 “Under the ABCTE program you only spend 2 weeks in the classroom, not much time if you've never taught.”
		Alt-College	#120 Q3 “Since I did an alternative certification, I was in a classroom while finishing my teaching degree. I was able to try different techniques in my classroom while learning about them. I loved the hands on approach.”
		T	#60 Q3 “Just during observations and internship”
		ABCTE	#19 Q3 “I held a temporary certification and was actually in the classroom with opportunities to monitor my "mentor" and speak with a teaching coach”
	College↔ High School	T	#6 Q 3 “Many presentations in my college classes as well as numerous observations at high schools”
		Alt-College	#4 Q3 “I had one professor who modeled various strategies for us as learners, It was powerful.”
		Alt-College	#13 Q3 “Classes that I took and reading about different strategies. I also have attended many workshops like Kagan that has helped.
		Alt-College	#75 Q3 “I was substituting for a large district while working toward my Master's. Many opportunities to observe other teachers and it was part of our Master's program to do observations.”
		Alt-College	#7 Q3 “Many strategies in the required professional development throughout my career.”
	Useless↔Beneficial	Alt-College	#109 Q3 “Student teaching at the high school level showed me the most variety of teaching techniques; my middle school

			student teaching experience was not as rewarding.”
		ABCTE	#39 Q3 “School was not that beneficial (education classes specifically)’
		T	#63 Q3 “Field experiences - the best part of teacher ed.”
		T	#68 Q3 “I was able to see different types of strategies used and I took the ones I liked best and have changed them to my liking each year.”
		T	#80 Q3 “Great teacher modeling and frequent visits in classrooms of various size, location and students (site visits).”

Appendix K

Teacher Sense of Efficacy Scale Questions Arranged by Subscales

EFFICACY IN STUDENT ENGAGEMENT

1. How much can you do to get through to the most difficult students?
2. How much can you do to help your students think critically?
4. How much can you do to motivate students who show low interest in science?
6. How much can you do to get students to believe they can do well in science?
9. How much can you do to help your students' value learning?
12. How much can you do to foster student creativity?
14. How much can you do to improve the understanding of a student who is failing?
22. How much can you assist families in helping their children do well in school?

EFFICACY IN INSTRUCTIONAL STRATEGIES

7. How well can you respond to difficult questions from your students?
10. How much can you gauge student comprehension of what you have taught?
11. To what extent can you craft good questions for your students?
17. How much can you do to adjust your lessons to the proper level for individual students?
18. How much can you use a variety of assessment strategies?
20. To what extent can you provide an alternative explanation or example when students are confused?
23. How well can you implement alternative strategies in your classroom?
24. How well can you provide appropriate challenges for very capable students?

EFFICACY IN CLASSROOM MANAGEMENT

3. How much can you do to control disruptive behavior in the classroom?
5. To what extent can you make your expectations clear about student behavior?
8. How well can you establish routines to keep activities running smoothly?
13. How much can you do to get students to follow classroom rules?
15. How much can you do to calm a student who is disruptive or noisy?
16. How well can you establish a classroom management system with each group of students?
19. How well can you keep a few problem students from ruining an entire lesson?
21. How well can you respond to defiant students?

Appendix L

Letter to be sent if no email is provided by DESE



Copy of letter to be sent to those
with no email address provided
by Core Data

Division of Teaching and Learning

One University Blvd.
St. Louis, Missouri 63121-4499
Telephone: 314-516-5951
E-mail: lg59a@umsl.edu

HSC Approval Number 241573-1

Dear High School Science Teacher,

My name is Linda Gaither and I am working on my PhD at the University of Missouri-St. Louis. For my research I am studying the effects of beginning teachers' beliefs about their own teaching ability and the effect of those beliefs on classroom management, instructional strategies, and student engagement. I obtained your name and school address from the Department of Elementary and Secondary Education Core Data.

I am inviting you to participate by completing the survey I have created on Survey Monkey. You will remain anonymous and this survey should not take more than 20-30 minutes of your time. Please follow the link below and complete my survey. I am collecting data for a 3 week period from August 1, 2011 to August 20, 2011. I would also like to do a few live interviews with any participants who are willing; however the live interview is not a necessary part of the survey.

Everyone who completes the survey will have the opportunity to submit their name for a \$50.00 online Best Buy® Certificate.

Thank you for helping.

Linda Gaither

Link: <https://www.surveymonkey.com/s/6C3C9SS>

Appendix M
Data for Participants in Phone Interviews and Focus Group

Participant	Event	Certificate Pathway	Efficacy (self-scored)	Years of experience	Degree Undergraduate	Master's Degree	School Type
Joe	Phone Interview	Alternative through a university	6	1	BA Biology	Animal Science	Rural
Sue	Phone Interview	Traditional	7	2	BA Math	-----	Rural
Mary	Focus Group	Alternative through a university	7	4	BA Anthropology	Master's in Education	Urban
Emma	Focus Group	Traditional	7	1 (student teacher)	Unified-Biology	-----	Urban
Caden	Focus Group	Alternative through a university	6	1	Biology	Master's in Education	Suburban
Ellie	Focus Group	Traditional	7	1	Biology	-----	suburban

Appendix N

Questions for Focus Group/Phone Interviews

Introductions: everyone will be given a code and identifying info will be changed to protect the identity of each participant. Filling out and returning the questions means you consent to the information being used in Linda Gaither's dissertation and may be shared with colleagues at the University.

First name

What you teach

Where you teach

How many years in teaching

Route you took to certification (i.e. traditional, Teach for America, ABCTE, etc.)

Question Set I: Choosing Teaching

- Why did you choose to become a teacher?
- Now that you are in a classroom, has your view of teaching changed any? Please elaborate
- How well do you feel like you fit in the role of teacher?
- What are your long-term career goals?

Question Set II: Teacher Education

- Can you describe your teacher preparation (education, internships, student teaching)?
- How well did your teacher training prepare you for teaching?

- Prompt for these: strategies for managing the classroom, the variety of instructional strategies you are familiar with and comfortable using in the classroom and techniques for engaging the students.
- What suggestions do you have for Teacher Education programs that could improve teacher preparation?

Question Set III: Working with Students

- How do you see your role when working with students who are struggling?
- Are you responsible for their success or failure? Please elaborate on both
- Can you describe an experience with a student that succeeded, how did that impact your view of yourself as a teacher?
- Can you describe an experience with a student that failed even after your intervention, how did that impact your view of yourself as a teacher?

Question Set IV: Teacher Self Image

- We know teaching is hard, especially early in your career, can you recall a time when you felt like giving up?
How did you overcome these feelings?
- What role does good classroom management have on your belief in your own ability as a teacher?
- What role do good instructional strategies have on your belief in your own ability as a teacher?

What role does student engagement have on your belief in your own ability as a teacher?

Exit Slip

Please rate yourself 1-9 (with 1 being and 9 being high) on your personal beliefs about your own ability to be successful as a beginning teacher. Explain how you made this determination.

Thank you for participating

Appendix O

Descriptive Analysis of Respondent Undergraduate Major

Appendix O

Descriptive Analysis of Survey Respondents Undergraduate Major

<i>n = 91</i>	Traditional (n = 53)		Alternative (n = 38)		Combined (n = 91)	
	Number	(Percent)	Number	(Percent)	Number	(Percent)
Undergraduate Major						
Education	26	(49.1)	0	(0)	27	(29.6)
Science	25	(47.2)	29	(77.6)	54	(59.3)
Other	2	(3.7)	8	(22.4)	10	(11.1)

Appendix P

Descriptive Analysis of Survey Respondent Grade Point Average

Appendix P

Descriptive Analysis of Survey Respondents Grade Point Average

<i>n = 91</i>	Traditional (n = 53)		Alternative (n = 38)		Combined (n = 91)	
	Number	(Percent)	Number	(Percent)	Number	(Percent)
GPA (undergraduate)						
4.0 +	0	(0.0)	1	(2.6)	1	(1.1)
3.6-4.0	26	(49.0)	16	(42.1)	42	(46.2)
3.1-3.5	23	(43.4)	13	(34.2)	36	(39.5)
2.6-3.0	3	(5.7)	8	(21.1)	11	(12.1)
2.1-2.5	1	(1.9)	0	(0.0)	1	(1.1)

Appendix Q

Descriptive Analysis of Survey Respondents Master's Degree

Appendix Q

Descriptive Analysis of Survey Respondents Master's Degree

	Traditional (n = 24)		Alternative (n = 26)		Combined (n= 50)	
Master's Degree	Number	(Percent)	Number	(Percent)	Number	(Percent)
Education	19	(79.0)	12	(46.2)	31	(62.0)
Science	5	(21.0)	9	(34.6)	14	(28.0)
Other	0	(0)	5	(19.2)	5	(10.0)

Appendix R

Descriptive Analysis Comparison of Type of School Where Respondents Teach to Type of School They Attended

Appendix R

Descriptive Analysis Comparison of Type of School (Rural, Suburban, Urban) Where Respondents Teach to Type of school they attended

<i>(n = 91)</i>	Traditional (n =53)		Alternative (n = 38)		Combined (n = 91)	
	Number	(Percent)	Number	(Percent)	Number	(Percent)
Teach Rural	20	(37.7)	23	(60.5)	43	(47.3)
Attended Rural	12	(60.0)	18	(78.2)	30	(69.8)
Attended Suburban	6	(30.0)	5	(21.7)	11	(25.6)
Attended Urban	2	(10.0)	0	(0)	2	(4.6)
Teach Suburban	26	(49.1)	13	(34.2)	39	(42.8)
Attended Rural	2	(7.7)	4	(30.8)	6	(15.4)
Attended Suburban	22	(84.6)	9	(69.2)	31	(79.5)
Attended Urban	2	(7.7)	0	(0)	2	(5.1)
Teach Urban	7	(13.2)	2	(5.3)	9	(9.9)
Attended Rural	2	(28.6)	0	(0)	2	
Attended Suburban	4	(57.1)	1	(50.0)	5	(22.2)
Attended Urban	1	(14.3)	1	(50.0)	2	(55.6)
						(22.2)

Appendix S

Current School Size versus School Size Attended

Appendix S

Current Size of Respondent's School Compared to Size Attended

<i>n</i> = 125	Traditional (<i>n</i> = 77)		Alternative (<i>n</i> = 48)		Combined (<i>n</i> = 125)	
	Number	(Percent)	Number	(Percent)	Number	(Percent)
Current Size < 500	17	(22.0)	24	(50.0)	41	(32.8)
Attended < 500	9	(52.9)	12	(50.0)	21	(52.2)
Attended 501-1000	3	(17.6)	7	(29.2)	10	(23.4)
Attended 1001-1500	1	(5.9)	3	(12.4)	2	(4.9)
Attended 1501-2000	2	(11.8)	0	(0)	2	(4.9)
Attended 2001-2500	1	(5.9)	1	(4.2)	2	(4.9)
Attended > 2500	1	(5.9)	1	(4.2)	2	(4.9)
Current Size 501-1000	20	(26)	6	(12.5)	26	(20.8)
Attended < 500	5	(25.0)	5	(83.3)	10	(38.5)
Attended 501-1000	11	(55.0)	1	(1.7)	12	(46.1)
Attended 1001-1500	2	(10.0)	0	(0)	2	(7.7)
Attended 1501-2000	2	(10)	0	(0)	2	(7.7)
Attended 2001-2500	0	(0)	0	(0)	0	(0)
Attended > 2500	0	(0)	0	(0)	0	(0)

	Number	(Percent)	Number	(Percent)	Number	(Percent)
Current Size 1001-1500	20	(26)	9	(18.7)	29	(23.2)
Attended < 500	5	(25.0)	0	(0)	5	(17.2)
Attended 501-1000	6	(30.0)	3	(33.3)	9	(31.0)
Attended 1001-1500	5	(25.0)	4	(44.4)	9	(31.0)
Attended 1501-2000	2	(10.0)	1	(11.1)	3	(10.3)
Attended 2001-2500	2	(10.0)	1	(11.1)	3	(10.3)
Attended > 2500	0	(0)	0	(0)	0	(0)
Current Size 1501-2000	9	(11.7)	6	(12.5)	15	(12.0)
Attended < 500	0	(0)	3	(50.0)	3	(20.0)
Attended 501-1000	1	(11.1)	0	(0)	1	(6.7)
Attended 1001-1500	2	(22.2)	0	(0)	2	(13.3)
Attended 1501-2000	5	(55.6)	2	(33.3)	7	(46.7)
Attended 2001-2500	0	(0)	1	(16.7)	1	(6.7)
Attended > 2500	1	(11.1)	0	(0)	1	(6.7)
Current Size 2001-2500	7	(9.1)	1	(2.1)	8	(6.4)
Attended < 500	0	(0)	0	(0)	0	(0)
Attended 501-1000	1	(14.3)	0	(0)	1	(12.5)
Attended 1001-1500	0	(0)	0	(0)	0	(0)
Attended 1501-2000	3	(42.9)	0	(0)	3	(37.5)
Attended 2001-2500	1	(14.3)	1	(100)	2	(25.0)
Attended > 2500	2	(28.5)	0	(0)	2	(25.0)

<i>n</i> = 125	Traditional (<i>n</i> = 77)		Alternative (<i>n</i> = 48)		Combined (<i>n</i> = 125)	
	Number	(Percent)	Number	(Percent)	Number	(Percent)
Current Size >2500	4	(5.2)	2	(4.2)	6	(4.8)
Attended < 500	1	(25.0)	0	(0)	1	(16.7)
Attended 501-1000	2	(50.0)	0	(0)	2	(33.3)
Attended 1001-1500	0	(0)	2	(100)	2	(33.3)
Attended 1501-2000	0	(0)	0	(0)	0	(0)
Attended 2001-2500	0	(0)	0	(0)	0	(0)
Attended > 2500	1	(25.0)	0	(0)	1	(16.7)

Appendix T**Pearson's Correlations Current School Size and Size School Attended**

Appendix T

Pearson's Correlations Current School Size and Size School Attended

	1 to >5 Years' Experience <i>n = 125</i>		1 to 5 Years' Experience <i>n = 91</i>	
	Current School	School Attended	Current School	School Attended
Current School	1	.400**	1	.407**
School Attended	.400**	1	.407**	1

** Correlation is significant at the 0.01 level (2-tailed).

Appendix U

Descriptive Analysis of Survey Respondents Age Range

Appendix U

Descriptive Analysis of Survey Respondents Age Range

	Traditional (n = 53)		Alternative (n = 38)		Combined (n = 91)	
	Number	(Percent)	Number	(Percent)	Number	(Percent)
Age Range						
20's	30	(56.6)	11	(28.9)	41	(45.1)
30's	15	(28.3)	15	(39.5)	30	(33.0)
40's	5	(9.4)	5	(13.2)	10	(11.0)
50's	2	(3.8)	7	(18.4)	9	(9.8)
Unknown age	1	(1.9)	0	(0.0)	1	(1.0)

Appendix V

Descriptive Analysis of Survey Respondent Years of Teaching Experience

Appendix V

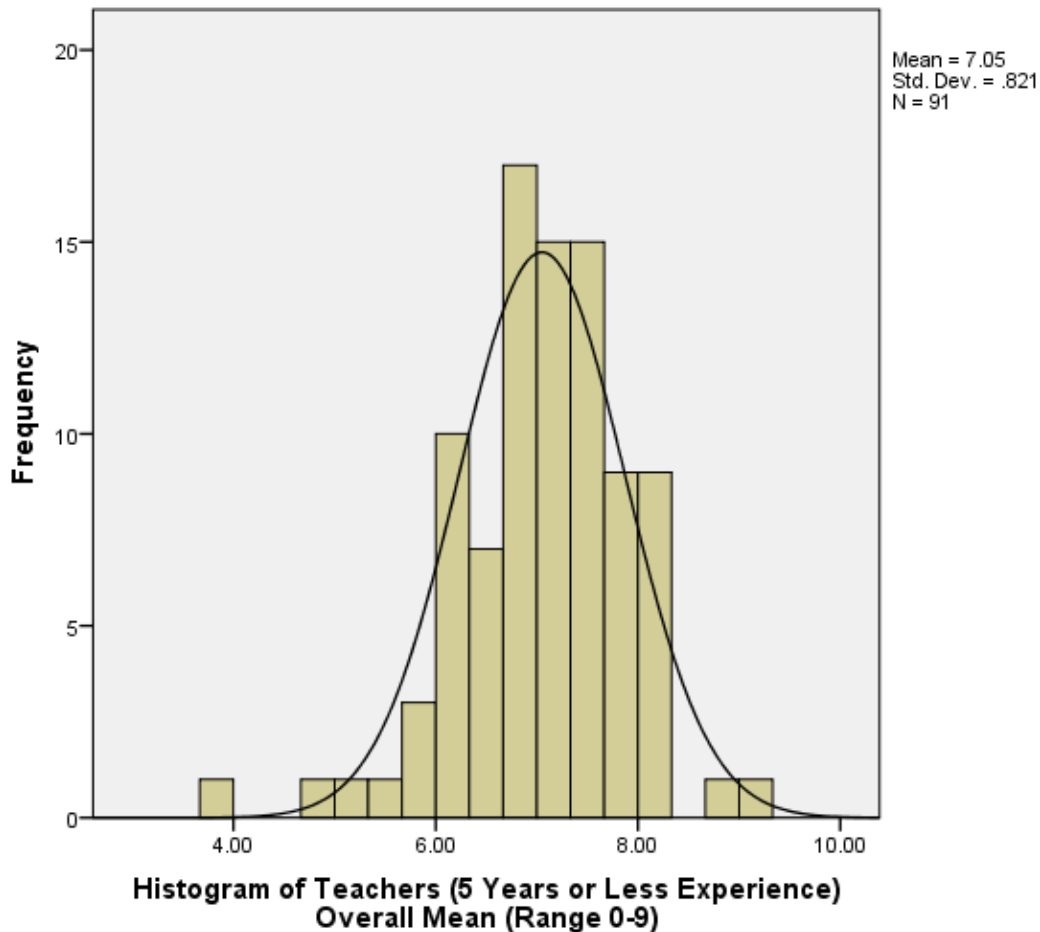
Descriptive Analysis of Survey Respondents Years of Teaching Experience

<i>n</i> = 91	Traditional (n = 53)		Alternative (n = 38)		Combined (n = 91)	
Years' Experience	Number	(Percent)	Number	(Percent)	Number	(Percent)
1	7	(9.1)	10	(20.8)	17	(13.6)
2	5	(6.5)	4	(8.3)	9	(7.2)
3	14	(18.2)	5	(10.5)	19	(15.2)
4	12	(15.6)	10	(20.8)	22	(17.6)
5	15	(19.5)	9	(18.8)	24	(19.2)

Appendix W

Histogram of Overall Mean on TSES

Histogram of Overall Mean on Teacher Self Efficacy Survey showing symmetrical distribution with three outliers



When examining the overall mean scores (Figure 2) the same symmetrical distribution is observed. The range of scores is from zero to nine with a mean score of 7.05 and a standard deviation of 0.821 ($n = 91$). Data are constrained due to the parameters of the testing instrument. Forty-six (50.5%) of the 91 respondents scored themselves over 7.05 (Mean) out of the possible 9. Twenty-five of the 46 are traditionally certified and 21 hold an alternative certification. Six of the 46 are in their first year of teaching, two in their second

year, 12 in their third year, 12 in their fourth year, and 15 in their fifth year. The lowest scoring respondent (3.88) is a traditionally certified teacher with four years of experience, Bachelor's in Biology and a Master's in Education. The respondent who scored themselves a perfect 9.00 is a traditionally certified teacher with five years of experience, Bachelor's in Education with a Biology emphasis, a Master's in special education, a specialist or doctoral degree, and a GED instead of a high school diploma. The second highest score (8.83) is an alternatively certified through a college teacher with five years of experience with a Bachelor's in Technology with a minor in education.

Appendix X

Multiple Comparisons Tukey HSD Pathway to Certification versus Opportunities to See

Modeling

Appendix X

Multiple Comparisons Tukey HSD Pathway to Certification (IV) versus Opportunities to see Modeling (DV) ($n = 91$)

(I) See Modeling Techniques	(J) See Modeling Techniques	MD (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Lower Bound
(0) None	1	.641*	.201	.010*	.12	1.17*
	2	1.012*	.194	.000*	.51	1.52*
	3	1.133*	.269	.000*	.43	1.83*
	0	-.641*	.201	.010*	-1.17	-.12*
(1) Few	2	.370	.154	.082	-.03	.77
	3	.492	.242	.182	-.14	1.12
	0	-1.012*	.194	.000*	-1.52	-.51*
(2) Some	1	-.370	.154	.082	-.77	.03
	3	.122	.236	.955	-.49	.74
	0	-1.133*	.269	.000*	-1.82	-.43*
(3) Many	1	-.492	.242	.182	-1.12	.14
	2	-.122	.236	.995	-.74	.49

*The mean difference is significant at the 0.05 level.

Appendix Y

Opportunities to Observe Modeling Compared to Certification Pathway

Table Y

Opportunities to Observe Modeling Compared to Certification Pathway ($n = 91$)

Opportunities	Total		Traditional ($n = 53$)		Alternative ($n = 38$)					
			#	%	Through a college ($n = 21$)		ABCTE ($n = 13$)		Other ($n = 4$)	
	#	%			#	%	#	%	#	%
None	14	(15)	4	(7.5)	5	(23.8)	3	(23.1)	2	(50)
Few	29	(32)	13	(24.5)	8	(38.1)	8	(61.5)	0	(0)
Some	39	(43)	29	(54.8)	6	(28.6)	2	(15.4)	2	(50)
Many	9	(10)	7	(13.2)	2	(9.5)	0	(0)	0	(0)

Appendix Z

Multiple Comparisons Games-Howell Classroom Management versus Opportunities to See

Modeling

Appendix Z

Multiple Comparisons Games-Howell Classroom Management (DV) versus Opportunities to see Modeling ($n = 91$)

(I) See Modeling Techniques	(J) See Modeling Techniques	MD (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
(0) None	1	.89847*	.24429	.004	.2431*	1.5538
	2	.66597*	.22275	.024	.0680*	1.2640
	3	.69571	.31524	.171	-.2264	1.6179
(0) Few	0	-.89847*	.24429	.004	-1.5538*	-.2431
	2	-.23250	.24390	.776	-.8771	.4121
	3	-.20276	.33052	.926	-1.1471	.7415
(1) Some	0	-.66597*	.22275	.024	-1.2640*	-.0680
	1	.23250	.24390	.776	-.4121	.8771
	3	.02974	.31494	1.000	-.8867	.9462
(3) Many	0	-.69571	.31524	.171	-1.6179	.2264
	1	.20276	.33052	.926	-.7415	1.1471
	2	-.02974	.31494	1.000	-.9462	.8867

*The mean difference is significant at the 0.05 level.

Appendix AA

Statistics on Teachers Who Reporting Seeing No Modeling

Appendix AA

Statistics on Teachers Who Saw No Modeling

ID	Cert	Classroom Management Efficacy Mean (7.34±.957)	Years of Experience	Age Range
28	T	8.50	5	30's
37	T	8.25	3	20's
70	T	8.13	5	30's
115	T	8.13	5	30's
4	Alt.-College	7.63	5	50's
48	Alt.-College	8.38	4	30's
94	Alt.-College	9.00	5	30's
110	Alt.-College	7.38	5	30's
1	Alt.-ABCTE	7.25	4	30's
39	Alt.-ABCTE	8.00	4	20's
112	Alt.-ABCTE	6.75	1	50's
24	Alt. Other	8.50	2	20's
25	Alt.-Other	7.63	3	40's
56	Alt.-Other	8.13	5	30's

Appendix BB

Modeling and Classroom Management

Table BB1: Comparison of Comments on Modeling and Classroom Management

Table BB2: Complete Set of Respondent's Comments

Appendix BB1

Comparison of Comments on Modeling and Classroom Management

Categories/comments	ID	Cert	Years of Experience	See Modeling	TSES	Classroom Management
Many opportunities in the classes required to earn alt cert	7	Alt-College	5	Many	7.00	8.00
Several; I was selected for a fellowship at UMC for Physics First	9	Alt-College	3	Some	8.17	9.00
Virtually none. I had one professor who modeled various strategies for us as learners, It was powerful.	56	Alt-Other	5	None	8.17	8.13
Visited a gifted education program for k-5th graders	98	T	3	Some	8.04	8.75
On the Job Training through Alternative Certification with peer support and mentoring	106	Alt-College	5	Some	7.54	8.38

Appendix BB2

Complete Set of Respondent's Comments on Modeling Compared to Classroom Management

Categories/comments		ID	Cert	Yrs. Exp.	See Model	TSES	Classroom Manage
Classroom Management	See Modeling						
Most of my strategies are preventive; I am upfront from day one about what is and is not allowed and we immediately establish certain routines	Excellent college professors and I try to model after them in my own classroom because they had very effective methods for student retention of material.	33	T	1	Some	7.00	7.50
I post my rules explicitly in the classroom, and I am more firm in the first quarter than in the latter quarters.	My opportunities were limited.	74	T	1	Few	6.29	7.88
Posted rules, warning system, "the evil eye", mutual respect	Several practicum experiences in urban and rural schools;	91	T	1	Some	6.92	7.38
I set expectations and explain them to the students. They are posted in the room. I am fair and consistent in enforcing consequences and rewards. I use a lot of proximity to manage side conversations.	Observed in many classrooms of all areas in the secondary school.	93	T	1	Many	6.96	7.63
Modeling is huge in my classroom. I use proximity often and redirection of behaviors and attention. I also use random techniques for calling on students to answer questions and participate in	Observed several and a good range.	101	T	1	Some	7.00	7.25

class.							
I manage the classroom by arranging student seating and grouping. I used any strategy I could imagine: small groups, pair share, non-linguistic, round robin, read-alouds, hands-on, technology, lecture, presentations...just anything I could use to change things up and keep it interesting.	2 classes focused primarily on strategy implementation	104	T	1	Some	6.17	6.25
My first year of certified teaching (2010-2011), I struggled with frequent disruptions to the learning environment, poor student work ethic, disrespectful behavior, bullying, etc. I tried many different things, but unfortunately it is very difficult to re-establish policies and procedures during the school year, so I was constantly challenged.	I worked as a Para-professional for 8 years	123	T	1	Some	7.08	6.25
Students are urged to be responsible for their actions and take control of their situation. Students are redirected often. Students do receive teacher as well as school detentions.	Observation hours required for undergraduate courses.	73	Alt-College	1	Few	6.25	6.00
I believe that keeping students busy is the greatest way to manage a classroom. When students are engaged in an activity and learning, they are far less likely to cause behavioral problems. Additionally, when problems do arise it is	Viewing teachers at xxx High School in Columbia, MO	79	Alt-College	1	Few	5.75	5.88

important to focus on the root of the behavior and not solely on discipline.							
Positive community atmosphere.	Teach for America institute to see various teaching techniques modeled.	92	Alt-Other	1	Some	7.33	7.25
First step is an atmosphere of mutual respect between the teacher and the students (at least for secondary school, in my experience).	ABCTE provides relatively few opportunities for hands-on classroom experience.	43	ABCTE	1	Few	6.88	7.25
If the students are co-operative there is no problem. I am very understanding and flexible. If they want to cut up, run the class and distract others, they go to the office.	almost none	47	ABCTE	1	Few	6.13	5.88
We are in the beginning phases of PBS this year and I am on the PBS team. I will be using several positive reward systems & hope they work. Again, I am just starting out and have a lot to learn!	I started working on my certificate when I started teaching last fall. My school has a lot of good Professional Development	59	ABCTE	1	Few	7.58	7.63
Use assigned seats. Positive Referrals for helpful students. Three-tier disciplinary structure 1. Warning 2. Lunch Detention 3. Write-up and/or Dismissal from Class	P/D program for beginning teachers Substitute teacher for several years	72	ABCTE	1	Few	7.96	8.50
I establish rules and procedures that the students are expected to follow.	I substitute taught and observed at the school where I am currently employed.	90	ABCTE	1	Some	7.42	8.50
Nothing	none	112	ABCTE	1	None	6.50	6.75
Same strategies I used in my career	Under the ABCTE program you	122	ABCTE	1	Few	7.83	8.75

in business (last position was Plant Manager of a chemical plant), clearly communicate expectations, respect each student, maintain high standards of performance and conduct for students and myself.	only spend 2 weeks in the classroom , not much time if you've never taught							
I use a seating chart , walk around my classroom to make sure students are on task, and I try to be as motivating as possible.	Observations in difference schools	44	T	2	Some	5.75	6.75	
I thoroughly explain my rules to my students. I also keep them posted throughout the school year so they are constantly reminded.	Substitute taught at an inner-city elementary and middle school. I observed at an inner city high school	57	T	2	Some	6.63	6.88	
I run a loosely controlled room, meaning that I like to give the students a certain degree of freedom, but I have ultimate control. I try to make sure I know of everything going on in the classroom. That way the kids feel like we have a mutual relationship of respect, but that they cannot take advantage of me.	Various techniques taught in all of my classes including assessment strategies, classroom management, and instruction techniques.	81	T	2	Few	6.75	7.38	
I have three rules: Be Safe, Be Respectful, Be Responsible. Students receive 4 hall passes a semester, this keeps students in the classroom and on task. 1st incident= verbal warning, 2nd incident= student is moved from current seat, 3rd incident= student goes to the office and parents are	Sophomore Internship and Junior Internship	88	T	2	Some	6.71	6.25	

contacted. If the incident happens during a lab and is a safety issue the student goes straight to the office.							
I plan a lot of activities for each class: lecture with note taking, group work, labs, etc. I believe students should not have "down time".	Complete 40 hours of observations before we entered our Master's program. Taught in the local schools periodically for 2 years before our student teaching.	111	T	2	Many	6.58	7.00
I try to have procedures for everything. I also try to build relationships with the students so they will perform for me.	I had just a few that were required.	77	Alt-College	2	Few	4.75	4.75
I spend the first few days trying to get to know the students and have them initiated into procedures from day 1. I use many nonverbal cues during whole class activities.	Only a few days of observation and if instructors used those techniques to teach the class I was enrolled in	84	Alt-College	2	Few	6.29	6.88
Nothing	None	24	Alt-Other	2	None	7.21	8.50
I try to keep things low-key and use a minimum of rules. I do my best to model respect for others and try to treat students as I would like to be treated in their place.	I completed a summer 9-credit-hour course (voluntarily, not required) designed to help people who were switching to teaching as a career.	78	ABCTE	2	Few	6.08	6.25
Positive reinforcement, reward (privileges)	Block I and Block II observations	35	T	3	Few	7.83	8.50
I have set rules and do not budge and I implement a seating chart.	Various observations with teachers through my classes.	36	T	3	Some	8.08	8.25
Nothing		37	T	3	None	8.17	8.25
I have assigned seating. This allows me to place students either close to or apart from other students	To observe a teacher during each of my semesters during the teaching program.	45	T	3	Some	6.46	6.75

as needed. I redirect when needed. I make phone calls home. I walk the classroom instead of standing near the front. I have set rules and guidelines.							
Verbal warnings, detentions, trips to the office. I try to be consistent. I find classroom management to be very difficult at times. I should contact parents more often.	I saw some strategies at xxx but would have like to see more.	62	T	3	Few	5.17	5.38
I don't. I have to constantly remind them to be quiet or do what I ask. It takes a lot out of me and constantly grates on my patience.	I saw four different schools for varying amounts of time.	66	T	3	Some	7.75	7.88
Being organized, chunking lessons, small break-out processing sessions	Teaching observation	71	T	3	Few	7.00	7.00
I use humor to keep things loose. I try to calm the situation by talking with the student or his or her parent. If the student is out of control, I send them to the principal.	Practicum in one of my beginning education courses had a field experience in a technology class another practicum that was 30 hours.	76	T	3	Few	5.92	5.75
I start with clear expectations and boundaries. I also make sure to structure as much of the class time as I can to prevent the opportunity for misbehavior.	Great teacher modeling and frequent visits in classrooms of various size, location and students (site visits).	80	T	3	Some	7.42	7.38
I use one rule in my class, respect yourself, respect others. All other rules and guidelines fall under this basic principle. I try as a teacher to always modify and change my classroom management skills and	a week at xxx High School as a practicum	86	T	3	Some	7.50	8.38

each class has a variety of different attitudes and personalities that help make the learning environment more conducive							
My main classroom management strategy is to preempt misbehavior. I do this by being prepared for every single lesson in advance and by trying to keep down time to a minimum. When the students are kept busy from the minute they walk into my class, I have very few management problems. The problems I do end up having are usually going to happen anyways.	I did not have much opportunity to observe science or other regular ed teachers in the act of teaching.	89	T	3	Few	7.50	8.50
I treat my students with respect. I listen to my students. I try to build an atmosphere that is comfortable and all students can get to know each other. I have high expectations, but everything isn't always about the concepts it's also about life lessons. I try to keep class time interesting by trying new labs and doing a lot of hands-on activities.	Visited a gifted education program for k-5th graders	98	T	3	Some	8.04	8.75
I explain my expectations right away and make it known that if they don't follow my rules, they are welcome to sit in the office, but they won't learn anything that way. I also ask what kind of expectations they have of me. Also they are	During my undergrad, I did a 1 month practicum (5 days a week, all day in the classroom, including presenting lessons) During my master's, we had observations as well as lesson presentations in many different	113	T	3	Many	6.33	6.38

responsible for their learning and while I am here to facilitate the learning... it is still up to them.	classes, so I got to see quite a variety of teaching styles as a student.						
I try to establish definite rules about what is acceptable behavior and what will not be tolerated in the classroom	I was able to observe college instructors and their methods of instruction	125	T	3	Some	7.50	7.88
I have 3 rules and allow the students to determine their protocol as to learning desires and they also develop the consequences for failure to follow. I have established procedures for classroom entry, homework, questions and general management.	Several; I was selected for a fellowship at UMC for Physics First;	9	Alt-College	3	Many	8.17	9.00
I use movement around the classroom. I am almost never just stuck behind my desk. I monitor student progress while I move around the classroom.	I did observations for my degree program as well as through my school district	105	Alt-College	3	Some	7.21	7.00
I use humor and try to make the students wish to stay on my good side.	none	25	Alt-Other	3	None	7.00	7.63
Advocate of Harry Wong	Several. Attended NTI and several professional development conferences provided by the state of Missouri and my professional health society	102	Alt-Other	3	Some	6.67	7.00
The students who take physics are generally those with few discipline problems. As such I allow the students some freedom because they know what type of behavior is	As alternative certification the models I have seen are those who I learned from.	85	ABCTE	3	Few	7.04	6.88

appropriate.'							
I mostly use the strategy of keeping students engaged and active.	I got to go into schools and observe different teachers for practicum hours my sophomore and junior year.	15	T	4	Some	7.29	8.38
Respect	Student teaching	31	T	4	Few	6.25	7.50
The main focus of my management system is respect.	I felt as though I didn't actually have that many opportunities. For one semester, I observed a teacher, but she quite often had me running errands for her,	34	T	4	Few	6.71	7.00
Proximity, buddy rooms, routines, seating charts, incentives	I went to various schools to observe, interview	41	T	4	Some	7.29	7.38
I use many of Fred Jones techniques as well as Ron Clark and just recently Whole Brain teaching techniques.	Was a paraprofessional while getting my certification so I many opportunities to be in different classrooms throughout the day	49	T	4	Some	3.88	3.88
Consistency. Making expectations and rules known and presented. I do not waiver for any reason or student.	Many observation hours at local schools	58	T	4	Many	7.25	7.63
I present student expectations from the beginning and am fair and respectful when enforcing those. I like to deal with student misbehavior in the room and as last resort send them to the office. I am forceful in the beginning and that pays off later when the students realize they cannot push the set boundaries.	Few, I was in an excelled program for certification	83	T	4	Few	7.21	7.63

I make sure I have a well-designed lesson plan before each class period. I make sure my students know the rules of the classroom and what I expect of them. I have many routines set up to allow my students to be familiar with my processes so they know what to expect.	I was required to observe classrooms of different settings before I was able to take entry level teaching classes	95	T	4	Some	6.96	7.13
Keep students engaged and active. Show interest in students as individuals.	30 hours of observation	96	T	4	Some	7.46	8.25
At our school we have a list of codes all students must abide by.	Plenty. We had a lot of opportunities to visit multiple schools and teaching levels.	103	T	4	Many	6.75	6.88
Students have rules, of course, that are explained, posted and put in writing. Students must sign, and their parents sign to acknowledge awareness of the rules. I rarely involve parents beyond this level, and don't believe their involvement is beneficial, since truly they are outside of the situation. However, an interesting and busy lesson is the best management strategy	MASTI program puts students in the classroom right from the beginning, and throughout the program, so a fair amount of technique was observed. However - I believe that even more observation of different teachers - other than the cooperating teacher would have been even more beneficial.	116	T	4	Many	6.58	6.75
consistent routines and procedures consistent consequences for students getting to know the students as people	15 hours of observations required per semester	117	T	4	Some	5.58	5.63
Routine, bathroom passes, verbal warnings, and a structured agenda displayed to the class.	many required hours of shadowing	10	Alt-College	4	Many	7.38	7.75
Students have an assigned seat and	Student teaching and observation	12	Alt-	4	Few	7.50	7.75

a syllabus that they are expected to follow. Parents(<i>she meant students</i>) must have their parents sign the syllabus saying that they understand and agree to the class room rules. Students may listen to mp3 players while working on individual work, but this is a privilege that can be taken away.			College				
Mostly I talk loud and clear. As soon as the bell rings we get busy.	just once I got to observe another teacher for a day	40	Alt-College	4	Few	7.71	8.13
BIST	None	48	Alt-College	4	None	7.63	8.38
Routine.	Not many	67	Alt-College	4	Few	7.96	8.13
Each student is different so I use a lot of strategies and find the one that works best for each student that needs behavior management. I have high expectations for ALL of my students and they are outlined at the beginning of the year	Student teaching at the high school level showed me the most variety of teaching techniques	109	Alt-College	4	Some	6.67	7.50
I use culturally responsive strategies, proximity control, frequent questioning, frequent task change, clear postings of expectations and procedures.	None. I have never taught in a classroom until I had my own room.	1	ABCTE	4	None	7.38	7.25
I consider myself highly entertaining. Students want to be in my room and pay attention to me to see how I will present material. When students are disruptive during work time I have a bell. First	I held a temporary certification and was actually in the classroom with opportunities to monitor my "mentor" and speak with a teaching coach	19	ABCTE	4	Some	6.33	6.38

ring is a warning, any subsequent rings of the bell adds five seconds students must stay seated and quiet after the release bell before leaving my room...if anyone talks/giggles/makes any noise counting starts over.							
You give respect to get respect. I lay out the ground rules day one and I follow through. I talk to my students as individuals and never just bark commands.	I did not see much variety at all.	26	ABCTE	4	Few	6.71	7.13
My expectations are consistent and try to mix up lecture, activities, etc. to keep students engaged.	School was not that beneficial (education classes specifically)	39	ABCTE	4	None	8.00	8.00
Bellwork students on task at all times sleepers get to stand up missing work gets parent contact try to be understanding give and require respect to all persons	Internship to work with middle school teachers-20 hrs. a week	8	T	5	Some	7.21	7.75
Warm-ups, Follow Tardy Policy, Homework due at the beginning of class. Consistency with my class	Observations 1st semester of student teaching	11	T	5	Few	7.96	8.25
I rely very heavily on routines. I teach them pretty extensively at the beginning of the year. Though I've been surprised that this works for High Schoolers, I also have students write sentences. I usually make a big production of getting out a post-it note and writing down what they have to write. I try to make it funny and use big words	2 Practicums	16	T	5	Few	7.17	7.50

I give my students respect	visited schools near college	17	T	5	Some	9.00	9.00
Cooperation.	Observations.	21	T	5	Few	7.96	7.88
Nothing	N/A	28	T	5	None	7.58	8.50
I maintain a safe energetic learning environment. We establish the rules and the students know that if they break the rules, there are consequences. If they choose to break the rule, then they are also choosing that consequence.	observation in local schools	38	T	5	Some	8.21	8.25
I expect students to be respectful to everyone in the classroom including the teacher	I saw a variety of teaching styles as an aide while I was attending college, and in block classes.	42	T	5	Few	6.88	6.50
I like to try and use the love and logic strategy of management. Basically I have few rules	I went to many different high school science classes and observed several times.	51	T	5	Some	7.71	7.63
I tend to really praise and notice when students are doing a good job so that they strive to do that behavior more often. I also try to nip little things in the bud by physically going over to the student and quietly saying something, or even just looking at a kid, if that works	I was in at least four different high school science classrooms at different times during my undergraduate studies	53	T	5	Some	6.75	7.13
I have guidelines given at the beginning of the year I use proximity I give warnings I call parents I send students to office I give detentions	Just during observations and internship	60	T	5	Some	6.67	7.50
I do community building and set rules and norms for the classroom.	None	70	T	5	None	8.04	8.13
There is a management system in	I had observations of a more	97	T	5	Some	6.96	7.50

place, but I try to address issues before it needs to go into effect	traditional style of teaching and my professor tried to model some inquiry kinds of stuff.						
I am a very patient teacher and allow a lot more things than some other teachers do. I do believe in having a controlled classroom though and try to keep an atmosphere where every student feels comfortable to learn and express their thoughts and opinions. I tend to yell at times which I know is not a model teacher trait, but it does tend to get the point across. If I have students that are being extremely disruptive I will have them go in the hall or directly to the office. I will also call home and talk to parents if there are students that are tending to be a disruption on a regular basis.	We had two different observation placements with different schools.	114	T	5	Some	6.17	6.25
On the first day of school I explain my class rules and I stick to them. I am very strict starting out and I lighten up as the year progresses if the students conduct themselves in a respectable manner.	I began teaching before I earned my teaching certificate. I did not begin coursework in the teaching field until the second semester of my first year of teaching. I believe that if a teacher really understands the subject that he or she teaches and can make it enjoyable for the students then the coursework is really not necessary. I did not learn anything from all of the classes	115	T	5	None	7.75	8.13

	that I took that taught me "how" to teach. You can either teach or you can't.						
I make it very clear from the outset that if we have a student-teacher conflict, I win. I let them know that "I win" not because I like to order children around. "I win" because it's my job to make sure everyone does well in my class. In order to do that, I require (and enforce) appropriate behavior. 'No' mean no, not maybe.	Virtually none. I had one professor who modeled various strategies for us as learners, It was powerful.	4	Alt-College	5	None	7.33	7.63
Seating chart determined after 2 weeks of classes so I can know the students & how they interact before placing them in a seat. Regular individual feedback on negative behavior.	Many opportunities in the classes required to earn alt cert,	7	Alt-College	5	Many	7.00	8.00
I will stop talking and look first. Sometimes I will say their name. Issues that a repeated-- I talk to the student privately. If that doesn't help, I notify the principal and he talks to them. I rarely have a disturbance that results in the student leaving my room and going to the office.	Classes that I took and reading about different strategies.	13	Alt-College	5	Some	7.46	7.88
Give expectations, follow rules with consistency, and use some BIST strategies.	I was substituting for a large district while working toward my Master's. Many opportunities to observe other teachers and it was part of our Master's program to	75	Alt-College	5	Many	6.50	6.38

	do observations.						
Treat students how I want to be treated. I use a business approach	none	94	Alt-College	5	None	8.83	9.00
Positive Behavioral Techniques Safe Crisis Management Positive Correction	On the Job Training through Alternative Certification with peer support and mentoring	106	Alt-College	5	Some	7.54	8.38
I set my rules to the students up front. There is not any tolerance with defiance. I have a certain order of discipline depending on the defense.	Not very many since I started teaching before I started my alt cert.	107	Alt-College	5	Few	6.46	6.75
I model respect for students and expect them to do the same for everyone else.	I had none because I was alternatively certified. I started teaching before taking teaching courses.	110	Alt-College	5	None	6.83	7.38
I create an atmosphere of respect for others. My high energy and passion for physics ignites the students' interest. I create lessons and labs that require attention and careful thought to master. I do not tolerate disrespect for me or for other students at all.	Virtually none. I had one professor who modeled various strategies for us as learners, It was powerful.	56	Alt-Other	5	None	8.17	8.13
Some teachers complain about discipline problems but I've not had a referral to the principal this year... It's not that I take a lot of guff it's just that you know you pick your battles You just have to gain some respect in the classroom and know when to pick your battles and know what's	Yeah I think actually in all honesty it would have helped me the biggest, of course I wouldn't have needed the background from UMSL but my student teaching experience was extraordinary.	Joe-Phone	Alt-College	1	Few	NA	NA

<p>appropriate and what's not appropriate and when they do cross that line then let them know. If you can keep them busy doing something it cuts down on your discipline problems a whole lot, but I've been pretty fortunate that I haven't had too many discipline problems to speak of.</p>							
<p>I am really conscientious of a lot of different instructional strategies and actually restricted by my floundering in classroom management of being able to use a lot of what I know because I can't relinquish that much control of the classroom but I would say that is my strongest piece, student engagement is next strongest and definitely management is definitely my weakest.</p>	<p>College did very little to prepare me for being in the classroom... a lot of busy work it seems like</p>	<p>Mary FG</p>	<p>Alt-College</p>	<p>4</p>	<p>Few</p>	<p>NA</p>	<p>NA</p>
<p>management is the big thing I am trying to work on and I think I'm getting a little better but definitely a ways to go.</p>	<p>and that I don't think that is very helpful and we'll watch a video from 70s about class management scenarios and that not real helpful because there not any solutions offered to the problems.</p>	<p>Emma-FG</p>	<p>T</p>	<p>1</p>	<p>Few</p>	<p>NA</p>	<p>NA</p>
	<p>We did a couple of observations at summer schools during that time but if I'm observing at a summer school I am not seeing typical classroom settings. If I'm</p>	<p>Caden-FG and survey</p>	<p>Alt-College</p>	<p>1</p>	<p>Few</p>	<p>NA</p>	<p>NA</p>

	<p>not seeing typical classroom students that means I'm seeing the lowest of the low yea so that wasn't helpful at all.</p>						
<p>And management I feel again that teaching is like a fine wine as you get older I'm hoping that I'll tend to get better with it and that maybe even I'll have a little more umm I'm older so you'll listen to me.</p>	<p>So I had some really good teachers but then I had some not so good teachers. and the good ones were always the ones when they were teaching it; like a teaching course they made us learn different strategies so kind of like we have new teacher meetings and they make us get into groups and then go and do things</p> <p>It was a semester of observations so I went twice or maybe three times a week and observed for like that whole day or something. And I got to see her teach</p>	<p>Ellie-FG and survey</p>	<p>T</p>	<p>1</p>	<p>Some</p>	<p>NA</p>	<p>NA</p>

Appendix CC

Multiple Comparisons Games-Howell Overall Mean Compared to Number of Years Teaching

Appendix CC

Multiple Comparisons—Games-Howell Overall Mean(DV) Compared to Number of Years Teaching (Range 1-5 years) ($n = 91$)

(I) Number of Years Teaching	(J) Number of Years Teaching	MD (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1 Year	2	.55353	.26791	.280	-.2657	1.3728
	3	-.34805	.24121	.605	-1.0430	.3469
	4	-.06056	.24687	.999	-.7684	.6473
	5	-.54522	.21850	.113	-1.1713	.0809
2 Years	1	-.55353	.26791	.280	-1.3728	.2657
	3	-.90158*	.28454	.036	-1.7566*	-.0465
	4	-.61409	.28935	.249	-1.4781	.2499
3 Years	5	-1.09875*	.26556	.006	-1.9099*	-.2876
	1	.34805	.24121	.605	-.3469	1.0430
	2	.90158*	.28454	.036	.0465*	1.7566
	4	.28749	.26483	.813	-.4698	1.0448
4 Years	5	-.19717	.23860	.921	-.8808	.4864
	1	.06056	.24687	.999	-.6473	.7684
	2	.61409	.28935	.249	-.2499	1.4781
	3	-.28749	.26483	.813	-1.0448	.4698
5 Years	5	-.48466	.24432	.292	-1.1816	.2123
	1	.54522	.21850	.113	-.0809	1.1713
	2	1.09875*	.26556	.006	.2876*	1.9099
	3	.19717	.23860	.921	-.4864	.8808
	4	.48466	.24432	.292	-.2123	1.1816

*The mean difference is significant at the 0.05 level.

Appendix DD

Multiple Comparisons Games-Howell Subgroup Student Engagement Compared to Number of Years Teaching

Appendix DD

Multiple Comparisons—Games-Howell Subgroup Student Engagement (DV) Compared to Number of Years Teaching (Range 1-5 years) ($n = 91$)

(I) Number of Years Teaching	(J) Number of Years Teaching	MD (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1 Year	2	.45810	.28627	.512	-.3884	1.3047
	3	-.30096	.28003	.818	-1.1098	.5078
	4	-.05184	.30225	1.000	-.9193	.8156
	5	-.55453	.28076	.299	-1.3622	.2531
2 Years	1	-.45810	.28627	.512	-1.3047	.3884
	3	-.75906	.26099	.057	-1.5357	.0176
	4	-.50995	.28469	.400	-1.3449	.3250
	5	-1.01264*	.26177	.006	-1.7873*	-.2380
3 Years	1	.30096	.28003	.818	-.5078	1.1098
	2	.75906	.26099	.057	-.0176	1.5357
	4	.24911	.27842	.897	-.5473	1.0456
	5	-.25357	.25493	.856	-.9813	.4741
4 Years	1	.05184	.30225	1.000	-.8156	.9193
	2	.50995	.28469	.400	-.3250	1.3449
	3	-.24911	.27842	.897	-1.0456	.5473
	5	-.50269	.27915	.387	-1.2980	.2927
5 Years	1	.55453	.28076	.299	-.2531	1.3622
	2	1.01264*	.26177	.006	.2380*	1.7873
	3	.25357	.25493	.856	-.4741	.9813
	4	.50269	.27915	.387	-.2927	1.2980

*The mean difference is significant at the 0.05 level.

Appendix EE

Multiple Comparisons Games-Howell Subgroup Instructional Strategies Compared to Years of Teaching

Appendix EE

Multiple Comparisons—Games-Howell Subgroup Instructional Strategies (DV)

Compared to Number of Years Teaching (Range 1-5 Years) ($n = 91$)

(I) Number of Years Teaching	(J) Number of Years Teaching	MD (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1	2	.77353	.31786	.149	-.1820	1.7290
	3	-.35226	.29476	.754	-1.2012	.4966
	4	-.01511	.28952	1.000	-.8463	.8160
	5	-.51605	.26960	.329	-1.2921	.2600
2	1	-.77353	.31786	.149	-1.7290	.1820
	3	-1.12579*	.31874	.016	-2.0811*	-.1705
	4	-.78864	.31390	.128	-1.7301	.1528
	5	-1.28958*	.29563	.003	-2.1906*	-.3885
3	1	.35226	.29476	.754	-.4966	1.2012
	2	1.12579*	.31874	.016	.1705*	2.0811
	4	.33715	.29048	.773	-.4940	1.1683
	5	-.16379	.27063	.973	-.9394	.6118
4	1	.01511	.28952	1.000	-.8160	.8463
	2	.78864	.31390	.128	-.1528	1.7301
	3	-.33715	.29048	.773	-1.1683	.4940
	5	-.50095	.26492	.338	-1.2557	.2538
5	1	.51605	.26960	.329	-.2600	1.2921
	2	1.28958*	.29563	.003	.3885*	2.1906
	3	.16379	.27063	.973	-.6118	.9394
	4	.50095	.26492	.338	-.2538	1.2557

*The mean difference is significant at the 0.05 level

Appendix FF

Comments on Education as a Career

FF1: Table Comparisons of Comments on Education as a Career

FF2: Complete Set of Respondent's Comments on Education as a Career Compared to Quantitative

Data

Appendix FF1

Comparing Comments on Education as a Career with Efficacy (Complete : Appendix FF2)

Category	Data	Comments
ID	9	Feelings: I love teaching. I plan on staying around for a while. Effective: I believe so.
Cert	Alt.-College	
Years	3	
Modeling	Many	
TSES	8.17	
Student Engagement	7.14	
Instructional Strategies	8.38	
Classroom Management	9.00	
ID	38	Feelings: I think it is a very rewarding career. It's unfortunate that there isn't very much respect for teachers. Effective: I think I am very effective. I work very hard at my job.
Cert	T	
Years	5	
Modeling	Some	
TSES	8.21	
Student Engagement	8.28	
Instructional Strategies	8.13	
Classroom Management	8.25	
ID	72	Feelings: My contract was renewed. I am also a pastor, and these two careers go hand in hand. Effective: As a first year teacher, I feel I did pretty well. Test scores went up from the previous year.
Cert	ABCTE	
Years	1	
Modeling	Few	
TSES	7.96	
Student Engagement	7.71	
Instructional Strategies	8.63	
Classroom Management	8.50	
ID	98	Feelings: I enjoy it and hope to continue to teach for a long time. Effective: I think I am effective and yes I believe it fits me well. I am very positive person and I continue to try and challenge myself and be the best that I can be.
Cert	T	
Years	3	
Modeling	Some	
TSES	8.04	
Student Engagement	7.57	
Instructional Strategies	7.63	
Classroom Management	8.75	

Appendix FF2.

Qualitative Comments on Education as a Career Compared to Quantitative Data

Categories/comments	ID	Cert	Yrs. of Exp.	See Model	TSES	Student Engmnt	Instruct. Strategies	Clssrm Mngmnt
Education as a Career								
<p>Relative: I learned the most from my grandma who taught in a one room school house; I would say I gained most of my classroom management ideas and practical knowledge from her. My sister was a teacher, but she was very jaded, so I guess I learned that if you're that unhappy in it, get out of it before it affects the kids in your class!</p> <p>Feelings: It is awesome, daunting, fulfilling, gut-wrenching, and tiring!! I love it! No two days are ever the same and I love watching kids get excited about learning.</p> <p>Effective: I don't know yet how effective I am, but I think I was born to do this. Time will tell</p> <p>Mentor: I had one mentor who almost scared me away from teaching and one who was awesome whom I still call for advice, so it was a mixed influence</p> <p>Admin: could not have asked for better or more supportive administration. They really care about the kids</p>	33	T	1	Some	7.00	6.29	7.00	7.50
<p>Relative: lot more unnecessary responsibilities and paperwork now than ever before; however, I also learned that it is still overall a rewarding profession. I also learned that it takes classroom control and organization to make a classroom run smoothly and to encourage learning.</p> <p>Feelings: It is a tough career and many people</p>	74	T	1	Few	6.29	5.71	5.13	7.88

<p>abuse the perks of the profession by slacking on teaching.</p> <p>Effective: I was not as effective this year as I would like to be, but since it was my first year I feel that is normal.</p> <p>Mentor: mentor/mentoring experience was limited.</p> <p>Students: The students were the main eye-opener for me. I expected them to want to learn on their own, especially since I had some of the brightest students ever to come through the school, but they did not. I have reformed almost everything I do since I started teaching.</p>								
<p>Relative: NA</p> <p>Feelings: LOVE IT</p> <p>Effective: Teaching is a great fit, but I need more practice at it to be most effective</p> <p>Mentor: My mentor helped me to look at teaching in such a positive light.</p> <p>Admin: NA</p>	91	T	1	Some	6.92	5.29	7.88	7.38
<p>Relative: It takes many more hours to be effective than those in a school day. I learned to respect all students and work with them while treating them with dignity.</p> <p>Feelings: I like teaching as a career but it is very tiring. So many extra things seem to get in the way of student learning.</p> <p>I believe that not everyone can teach; teaching is a gift. I believe that if a teacher gets to the point of resentment they should leave the career before they inhibit student success.</p> <p>Effective: I think I'm an effective teacher and that it comes very naturally to me. I think teaching is a</p>	93	T	1	Many	6.96	6.00	7.38	7.63

<p>good fit for me.</p> <p>Mentor: I was assigned a mentor but we barely spoke all year. I didn't even know his wife's name until the last week of school. It has not helped me thus far.</p> <p>Admin: Policies have had the most influence because they aren't people. I can deal with people and talk to people to figure out what will work. Policies are just passed down and I have to follow them. Some policies I see as pointless and just interfere with the main goal of student success.</p>								
<p>Relative:</p> <p>Feelings: The idea of teaching is romanticized. I wish the bureaucracy could be removed from public education. There are too many cooks in the kitchen and at the end of the day it is bottom dollar/results not the best interest of the students.</p> <p>Effective: I believe teaching is a wonderful fit for me. I know I have a great deal to learn and I am far from a master teacher</p> <p>Mentor: My first year mentor allowed me to vent my frustrations and ask questions. She was great but I did not think the program was a benefit other than because it was required by the state for certification</p> <p>People: I love my department and I know not many can say that. I forgot to put my department down as a big reason I am staying put in my current position.</p> <p>There was no consistency with the school policies. I am also tired of everyone (boards, government etc.) focusing on the graduation/fail rate and not what the students have learned/earned. There is no</p>	101	T	1	Some	7.00	6.43	7.13	7.25

student accountability however the teachers are liable for everything.								
<p>Relative: Teaching is also hard work and requires constant adaptation and evolution.</p> <p>Feelings: I chose to return and was asked to do so. Effective: I think teaching will be better for me as I develop and learn what my role needs to be. I am glad to have the first year finished so I can modify my approach.</p> <p>Mentor: I had a magnificent mentor. She was attentive and very helpful in providing useful and practical advice. All teachers really need a mentor to talk collaborate with. It's imperative.</p> <p>People: Community culture hugely influence student involvement and acceptance and incorporation of information. Many times I thought students' existing knowledge was too powerful to adjust or change.</p>	104	T	1	Some	6.17	5.71	6.50	6.25
<p>Relatives: Ideas and tips on managing classroom and different strategies for teaching.</p> <p>Feelings: I am hoping that I will be more successful this year. While I have been discouraged with many aspects of teaching, I still believe I am meant to teach, so I plan to make it a good fit for me. I am invested in my profession.</p> <p>Mentor: Technically, I had a mentor, but no real mentoring went on. She was herself a very good teacher and was nice enough to me, but never shared any secrets or was unable to articulate philosophy about classroom management or what works best with the students.</p> <p>Admin: My perspective has changed since moving to Missouri. Small towns are not as I perceived</p>	123	T	1	Some	7.08	6.71	8.50	6.25

<p>them. I have experienced prejudice and bigotry for the first time in my life---not due to race or religion, but due to being, as they put it---an outsider. We have a new superintendent, so I am hopeful that the administration will begin backing teachers and policies.</p>								
<p>Relatives: Feelings: Because I have to. Because its' my job. Because it's what I love. Because I want to do better this year. Teaching is much more than a job. Effective: As a second year teacher I am not as effective in some areas. I am also not as effective as other teachers. I think, hope, know that this will change over time. Teaching is the only fit for me. Mentor: This mentor has helped out tremendously in ways I never would have imagined. I would have had a much harder time if I had not had a mentor. (My mentor is not in my subject field but is an expert in classroom management.) Admin: My administration has been helpful and is very supportive, but I can't necessarily say they have really influenced by outlook on education as a career.</p>	73	Alt- College	1	Few	6.25	5.71	6.88	6.00
<p>Relatives: Feelings: I live to teach. It is one of the hardest things that I have ever done. It is mostly a thankless job and most of the contact you get from the public is negative. However, it is one of the most important careers in helping to continue to see the prosperity in knowledge that our country has been fostering. Effective: I feel like I am not the most effective teacher currently. Teaching is a great fit for me</p>	79	Alt- College	1	Few	5.75	5.57	5.63	5.88

<p>because it affords me the opportunity to continue to develop professionally until I retire Mentor: My mentoring experience taught me a lot about my capabilities in the classroom. I learned that I was able to overcome many obstacles Peers: I think the biggest factors that have influenced my philosophy on education are my peers, and the current state of our country.</p>								
<p>Relatives: Feelings: Teach for America commitment I think I want to go into higher level teaching (medical school). Effective: I enjoy teaching. Mentor: I did not have a mentor but I wish I did. Admin: Administration policies most affected my career</p>	92	Alt-Other	1	Some	7.33	7.43	7.13	7.25
<p>Relatives: he imparted to me empathy and a compassion for the development, both social and intellectual, of young people. More than anything, he taught me that education is about mutual respect Feelings: I feel that education is one of the most ennobling careers that a person can possibly pursue, which holds innumerable rewards for someone who truly loves the job. Effective: I feel that I am very good at my job, although I have a very small amount of experience. I have lots of room to grow, but teaching is the perfect fit for me. There is nothing I would rather be doing. Mentor: I have gotten two teachers with more than a decade of experience in this particular school district, and some of the ideas and strategies they have shared with me are the main reason that I</p>	43	ABCTE	1	Few	6.88	6.57	7.00	7.25

<p>made it through my first year. I think the experience of a good mentor is invaluable to a beginning educator.</p> <p>Admin: The lack of administrative support for teachers when parents get involved, the endless bureaucracy, class sizes that are nearly unmanageable, and many other things are sources of frustration, and create roadblocks to effective teaching, but teachers who really love the job can overlook all of that and still be positive about their career.</p>								
<p>Relatives: It is difficult, political and rewarding. It pays very little.</p> <p>Feelings: So far so good. I was a catholic school girl and a former US Marine. I feel structure and discipline are necessary for a smoothly running school. I believe that kids need a firm hand in a velvet glove but never the upper hand...ever in a teaching situation.</p> <p>Effective: Yes, I have three sons. I feel I can teach effectively</p> <p>Mentor: My mentor had 30 years' experience and was very helpful!</p> <p>Admin: My principal. He backs me up.</p>	47	ABCTE	1	Few	6.13	4.71	8.00	5.88
<p>Relatives:</p> <p>Feelings: I really enjoy it! I have a lot to improve on & learn, but I really enjoyed last year and look forward to being more effective & successful in the future. I love it but, it is so much more work than what I thought it would be!</p> <p>Effective: I am only going into my second year so, I have A LOT to learn but I feel for the most part students enjoy my classes and have been pretty</p>	59	ABCTE	1	Few	7.58	7.57	7.50	7.63

<p>successful. That said I hope to improve every year.</p> <p>Mentor: I love my mentor! We meet frequently and her room is right down the hall from me. She is always very helpful and there when I have questions, which is often!</p> <p>Admin: My administration is very helpful and supportive. They have really helped me with teaching techniques and discipline in the classroom. It's a very small school (k-12 in one building) and they have great community support that I like.</p>								
<p>Relatives: Methods of dealing with parents Homework policies Dealing with administration</p> <p>Feelings: My contract was renewed. I am also a pastor, and these two careers go hand in hand. I care about the students, and believe that as a teacher, I can help them grow intellectually and interpersonally.</p> <p>Effective: As a first year teacher, I feel I did pretty well. Test scores went up from the previous year.</p> <p>Mentor: I have appreciated the input, advice, and examples of those who are my mentors</p> <p>Admin: He has helped me to overcome obstacles and challenges which might have been game-changers for me otherwise. With the experience and guidance I am getting under his leadership, I believe that education may be a career possibility for me.</p>	72	ABCTE	1	Few	7.96	7.71	7.63	8.50
<p>Relatives:</p> <p>Feelings: While I have had other jobs, teaching the first field I've worked in where I feel like I have a career. It gives me the opportunity to improve my skills, gain knowledge, and grow professionally.</p> <p>Effective: I feel teaching is a good fit for me,</p>	90	ABCTE	1	Some	7.42	6.43	7.25	8.50

<p>because I have always enjoyed the academic setting, and love seeing students grasp a difficult concept.</p> <p>Mentor: My small school does not have a formal mentoring program, but my mentor teacher has been very encouraging, helpful, and always willing to answer my question and give me advice.</p> <p>Admin: The administration at my school gives me quite a bit of autonomy in my classroom, which helps to not feel limited with what I can do. They also do an excellent job with general school discipline, which helps in managing my own classroom</p>								
<p>Relatives: Dealing with parents can be the hardest part of teaching</p> <p>Feelings: no response</p> <p>Effective: no response</p> <p>Mentor: no response</p> <p>Admin: no response</p>	112	ABCTE	1	None	6.50	6.14	6.25	6.75
<p>Relatives: My sister was a teacher, principal and administrator her entire career. Without her help and knowledge I would have had a very difficult time transitioning into teaching. She has been a critical resource and influence.</p> <p>Feelings: It's challenging but rewarding. The instant feedback in the classroom can be great, especially when you see that the students "get it.". The salary sucks, as does the lack of resources (financial and physical) when compared to business.</p> <p>I think alternate career teachers like myself can bring a new dynamic to teaching. I think the fact I've been successful in the "real" world gives me</p>	122	ABCTE	1	Few	7.83	7.29	7.25	8.75

<p>useful knowledge and experiences that someone who has only worked in a classroom might lack.</p> <p>Effective: I think it is a good fit.</p> <p>Mentor: I was fortunate to have a good mentor, she is thoughtful, supportive and kind. I felt I could go to her with any issue or problem.</p> <p>Admin: nothing</p>								
<p>Relatives: It was difficult, but rewarding.</p> <p>Feelings: I like teaching as my career. I enjoy coming to work every day.</p> <p>Effective: My students get good grades and enjoy my class and are motivated in my classroom.</p> <p>Mentor: My mentor helped me when I needed it.</p>	44	T	2	Some	5.75	5.00	5.50	6.75
<p>Relatives:</p> <p>Feelings: I really enjoy teaching and look forward to each new year to get to know more students.</p> <p>Effective: I feel that I have been effective and have taught my students material for both inside and outside of the classroom. <u>While I have felt down about this myself,</u> I have been reminded by most students and their parents how much I have taught them and made them enjoy science again. I do believe that teaching is a great fit for me and I look forward to going to work every day to see my students and continue to build relationships with them.</p> <p>Mentor: The mentoring experience seemed to be non-existent for me. Since I came in during the middle of the school year, I felt like I was on my own to figure out many things. Often times, I found my mentor to be too busy to help me or could not explain things that were in a manner that I could understand.</p>	57	T	2	Some	6.63	6.00	7.00	6.88

<p>Admin: The lack of administration following policies and procedures has been very discouraging. When you try to enforce the rules on students as set forth by the student handbook and they are not enforced by the principals, it is upsetting and makes you feel like you have wasted your time. I would say this has had given me a bit of a negative outlook on teaching</p>								
<p>Relatives: That students can be frustrating but to stay positive! Feelings: I still like teaching and need money! It can be very stressful, but also very rewarding. I think that it is so much harder than I ever imagined before I was a teacher. There are so many things to worry about/take care of. Effective: I think that I am a good teacher. There is always room for improvement and I try to work on that from year to year. So far, I have had good results and have seen students learning in my classroom, so I think that I have been an effective teacher for the past 2 years. Mentor: My mentoring program does not really do much for me except create more paperwork. I think that the PROGRAM is pointless! Admin:</p>	81	T	2	Few	6.75	6.14	6.50	7.38
<p>Relatives: Feelings: My mentoring program does not really do much for me except create more paperwork. I think that the PROGRAM is pointless! I feel that teaching is not a respected career anymore. Effective: My first year was definitely a learning year. Classroom management was very challenging for me. I feel that teaching is a very enjoyable</p>	88	T	2	Some	6.71	6.00	7.50	6.25

<p>career but the district and administration has to be a great fit also.</p> <p>Mentor: My mentor was very helpful to me and offered several tried and true methods that work in our specific school district and students.</p> <p>Admin: Administration support is key to a successful school year. Policies need to apply to all students and no exceptions because of student's parents or sports position.</p>								
<p>Relatives: Teaching will never be an easy job. However, if you work hard, you will enjoy every day.</p> <p>Feelings: It was challenging, but it was a wonderful experience! I think it is an honorable profession.</p> <p>Effective: I have only taught one year, but I think I was effective. Students learned and responded positively to me. I think it is a great fit so far!</p> <p>Mentor: I had a wonderful student teaching experience where my mentor explained all of his beliefs</p> <p>Admin:</p>	111	T	2	Many	6.58	6.43	6.38	7.00
<p>Relatives:</p> <p>Feelings: Things are improving. I enjoy teaching but don't feel supported by administration.</p> <p>Effective: I am becoming more effective as I am now beginning my 3rd year. I have a better understanding of how to manage my classroom and am improving my teaching strategies. Year 2 was much better and I needed her help very little. Year three is off to a great start.</p> <p>Mentor: I had a great mentor. My first year I call the "hell year". I had the worst group of freshman ever to enter our school and got very little help. If</p>	77	Alt-College	2	Few	4.75	4.71	4.75	4.75

<p>it wasn't for my mentor I would not have returned. Admin: I love teaching. The problems are all the politics involved in the buildings and how much support we get from administration. If we had more support and administration treated us as professionals it would be a less stressful job. I work at a low performing school so they have implemented so many new policies that we have very little time to prepare. They have taken over our plan time for meetings except on Friday. They have done so much data collecting that they don't use. I think if they focused on a few things instead of implementing many new things we would see more progress</p>								
<p>Relatives: That it is most rewarding when you build solid relationships with students who want to keep in touch with you and value your contribution to their life and education Feelings: I still feel like I can improve. Even in the same day I will feel overwhelmed and frustrated and happy with progress at different times. I feel like the preparation most teachers get is inadequate prior to entering the classroom, whether a traditional or nontrad certification. Effective: I feel like I have a lot of room for growth and improvement, but I lack confidence without training. Mentor: I really liked my mentor but she didn't teach them same subjects I did, so I had to find other people to help me with curriculum and day-to-day planning. Admin:</p>	84	Alt-College	2	Few	6.29	6.14	5.88	6.88
<p>Relatives:</p>	24	Alt-	2	None	7.21	6.71	6.38	8.50

<p>Feelings: To Continue Working/Teaching Effective: no response Mentor: no response Admin: no response</p>		Other						
<p>Relatives: Feelings: I'm trying to do my best to help children/young people and therefore our world. Effective: I believe teaching is a good fit because I believe it's what I'm supposed to be doing. I know I haven't been able to reach all kids so I think I need to be more effective. Mentor: My best mentors weren't my official mentors. People who just stopped by to discuss how things were going and asked me questions and seemed to care about me and the students were very positive influences. Admin: a helpful administration--it's really nice to have administrators who consistently remind us we're here for the kids</p>	78	ABCTE	2	Few	6.08	5.86	6.25	6.25
<p>Relatives: Feelings: Good school, good pay Effective: Mentor: Admin:</p>	35	T	3	Few	7.83	6.00	8.63	8.50
<p>Relatives: It takes a good amount of effort and you have to really want to help change the students' lives. Feelings: I enjoy teaching. I feel like every day is different and there are great benefits as a teacher. Effective: I think teaching is a good fit. I enjoy science and I want students to enjoy science Mentor: My mentors helped me stay focused and remember to have things done and gave me a list of</p>	36	T	3	Some	8.08	7.71	8.38	8.25

do's and don'ts and what to expect Admin: Administration, sometimes you need their back up and they are not there for that always. The rural area I teach in has influenced me. I feel that this area is not very supportive of academics and that makes it difficult for the teacher.								
Relatives: Feelings: I am returning Effective: Mentor: Admin:	37	T	3	None	8.17	7.71	8.50	8.25
Relatives: To have fun with it. Make it interesting and fun/engaging for the students. Be patient. Feelings: I love teaching. I can't imagine doing anything different. I want to be in the classroom until the drag me out kicking and screaming. I love teaching Effective: I'm effective if the students learn how to question, how to think, how to problem solve Mentor: I took the good and bad with my mentoring experience. I had some teachers that I felt didn't really "teach" they just presented information. I also had teachers that expected me to do my own thing, but when I asked about feedback on something I wanted to do they said I couldn't do it. Those same teachers though gave me great ideas on how to teach in the classroom and how to make it engaging for the students People: I need to care about the students, help them to succeed (which doesn't always mean an A), and be a positive influence in their lives. The day that I can't do that is the day I will step down as a teacher. If my mom can keep that feeling in her	45	T	3	Some	6.46	5.86	6.75	6.75

heart for over 25 years, then I know that I can too.								
<p>Relatives: My father and many family friends explained that teaching is rewarding and challenging at the same time.</p> <p>Feelings: I like teaching so far and feel like I'm getting better at it.</p> <p>Effective: I was unsure of the fit my first year or two, but have become more comfortable. I feel that my effectiveness has grown very much but there are many things I can improve upon.</p> <p>Mentor: My mentor and I had only the necessary contact and I did not get much out of it, though she was always there to answer my questions</p> <p>Admin:</p>	62	T	3	Few	5.17	5.14	5.00	5.38
<p>Relatives:</p> <p>Feelings: I like my job I can do it for a little while longer.</p> <p>Effective: I am effective for some students and I fail some students entirely. I am OK as a teacher. I think it will take me a while to hone my skills, but might get burned out before I'm really effective.</p> <p>Mentor: I had a mentor that was there to answer questions but happy to let me make mistakes. That's what teaching's about, right?</p> <p>Admin: The gossip-and-gripe mill is disheartening. So are all of the responsibilities imposed by legislators. That can get overwhelming.</p>	66	T	3	Some	7.75	6.86	8.25	7.88
<p>Relatives:</p> <p>Feelings: because it is a job. I may leave someday. Not as much respect in our communities for educators.</p> <p>Effective:</p> <p>Mentor: My mentor still greatly helps me in</p>	71	T	3	Few	7.00	7.00	7.00	7.00

<p>making decisions for our plc and in my classroom Admin: Tenured staff in my department, in general have helped me to understand that I may not want to be in education forever.</p>								
<p>Relatives: Very little Feelings: Teaching is stressful but fun. Effective: I improve every year that I teach. I believe I am effective because of the information my students seem to know about the subject matter at the end of the year. Teaching is a good fit for me because I am someone who likes to move around and help others. Mentor: Positive. It is exactly how I see teaching now. Admin: There are a lot of policies but it helps keep everything running smoothly like it should</p>	76	T	3	Few	5.92	5.29	6.50	5.75
<p>Relatives: From my father's experiences working his way up to administration, I have decided instead to focus on improving my skills in the classroom. I plan to stay teaching, not working my way up. Feelings: I love my job and could not see doing anything else. Effective: While I do think teaching is a good fit, I am not satisfied with my abilities and will continue to strive for better throughout my career. Mentor: My mentors, both official and unofficial, were a positive influence on my teaching. People: My colleagues help me to always keep a positive outlook.</p>	80	T	3	Some	7.42	7.43	7.50	7.38
<p>Relatives: That it is important to love what you do and that each day is different do let yourself get into a rut and try to make each day new and exciting for yourself!</p>	86	T	3	Some	7.50	7.29	6.63	8.38

<p>Feelings: It is a very rewarding and personally uplifting career, although it can be difficult and bleak at times. I think the most awesome thought about students I have is the amount of lives that you touch and never get to see grow.</p> <p>Effective: I think that each year I become a more effective teacher by constant reflection and feedback on what I do and how I can improve it. I think that by being a successful teacher in the long run, it is about constant changing and understanding what it means to be effective to the students, as they are always evolving and changing along with society.</p> <p>Mentor: I didn't have much contact with my mentor, it could be a very positive experience but I really don't have enough experience to comment on it.</p> <p>Admin:</p>								
<p>Relatives: It is a rewarding profession. There is too much political and bureaucratic oversight of the education process. The recognition and compensation for teachers does not match up to the hours and education required to do a competent job.</p> <p>Feelings: We should be paid the same amount as other professions that require professional training. There are few financial perks to teaching and this is the main drawback of being a teacher. On a positive note, the hours are great, I love the school calendar. My favorite thing about teaching is helping students to succeed at life. This is where my motivation to teach comes from. I would not recommend teaching to very many people. I believe this is partially why there are so many bad teachers</p>	89	T	3	Few	7.50	5.86	8.00	8.50

<p>in this profession. It takes a lot of motivation and energy to be a good teacher. Also, some of the older good teachers have burned out and are no longer putting any effort into their job. It is hard to describe the demands made no a teacher, but they come from all directions. The main drawback being my first point above, there is not adequate compensation for the demands and stress.. The expectations of the teachers are still increasing while the pay scale is frozen and benefits are reduced. Accounting for inflation I am actually making less money than in previous years and putting in roughly 10-20 more hours per week at a higher level of stress.</p> <p>Effective: I am effective with students that are open to receiving instruction and learning. I have no effect on students that do not care about themselves or their futures</p> <p>Mentor: he mentoring experience was mostly a waste of time. I was mentored by a home economics teacher who was much like my mother.</p> <p>Admin: I have been fortunate to have a good administration during my first three years as a teacher. This is probably the single biggest factor in why I didn't leave teaching as a profession.</p>								
<p>Relatives:</p> <p>Feelings: I enjoy it and hope to continue to teach for a long time.</p> <p>Effective: I think I am effective and yes I believe it fits me well. I am very positive person and I continue to try and challenge myself and be the best that I can be.</p> <p>Mentor: Very positive-I learned many lessons of</p>	98	T	3	Some	8.04	7.57	7.63	8.75

<p>"what not to do" and what "good teaching" really looks like. And 'good teaching' doesn't always look the same...that is what is so fun about it. Admin: Sometimes policies negatively affect my thoughts of teaching as a career, but never enough to steer me a way.</p>								
<p>Relatives: Feelings: I enjoy teaching. it was a 2nd career for me and I really do love it. I love it. while I had difficulties my first year with classroom management, I continue to grow. Effective: I continue to learn more about teaching and I think the more I learn and the longer I teach, the better I will become. Mentor: I had a mentor my first year and I did learn a lot from her. I actually got more out of working with her then through the "official" mentoring activities we did. Admin: I see a lack of support from administrators as a set back as well as a frustration. We have policies and one of the worst problems we have with administration is administrators who don't follow policy.</p>	113	T	3	Many	6.33	6.00	6.50	6.38

<p>Relatives: Not much.</p> <p>Feelings: I enjoy it most of the time. I do wish it paid a little better but there are other benefits of teaching such as time off and the interaction with students.</p> <p>Effective: I can help those who want help or try to do their work. Those who have no ambition or desire to learn are very hard to reach.</p> <p>Mentor: I have received mentoring from many of my fellow teachers at different times. Their insight of students and what works in their classrooms can be very helpful.</p> <p>Admin: There is too much paperwork that takes away from the time to teach. Limit paperwork and let me spend more time teaching.</p>	125	T	3	Some	7.50	7.14	7.75	7.88
<p>Relatives:</p> <p>Feelings: I love teaching. I plan on staying around for a while.</p> <p>Effective: I believe so.</p> <p>Mentor: good</p> <p>Admin: administration - their positive outlook and desire for the students' success make teaching outstanding choice.</p>	9	Alt-College	3	Many	8.17	7.14	8.38	9.00
<p>Relatives: That each student is special and can learn. Teaching can be very rewarding - especially the relationships with students that are formed.</p> <p>Feelings: I was offered a contract. : I think that teaching is very rewarding at times, and frustrating at others. The rewarding parts include dealing with the 90% of students that are well-behaved and well-intentioned. Another rewarding part is when a student finally "gets it" with a concept. The frustrating part would be students that are only</p>	105	Alt-College	3	Some	7.21	7.14	7.38	7.00

<p>there to be a disruption and don't seem to care if they learn anything in school.</p> <p>Effective: I think that I am an effective teacher. In my assessments</p> <p>Mentor: My mentoring experience was a positive one. I had a mentor that took lots of time with me. We had long talks about things frequently that helped me. Positive experience.</p> <p>Admin: My administration has had a big influence on my outlook of teaching as a career. Long discussions with my principal are frequent. Seeing things from my principal's perspective helps me to put my teaching more into perspective.</p>								
<p>Relatives: Exhausting, only intermittently rewarding</p> <p>Feelings: Still a challenge. Teaching is essentially volunteer work for capable people. Other careers are more lucrative and provide more recognition. One must really wish to do something meaningful.</p> <p>Effective: There is a lot more apathy than I expected. Especially since I teach a difficult elective. You would think that only motivated students would sign up. You would be wrong. For students that care to try, I think I am very effective.</p> <p>As for teaching being a good fit or not, that remains an open question. Can I derive sufficient satisfaction from the minority of students I can help (the ones who care to try), or will I be miserable and focus on the rest? I don't know yet.</p> <p>Mentor: Mentoring gave me permission to be less than perfect.</p> <p>Admin:</p>	25	Alt-Other	3	None	7.00	5.43	7.75	7.63
<p>Relatives:</p>	102	Alt-	3	Some	6.67	6.43	6.75	7.00

<p>Feelings: Definitely a calling....helps to have supportive administration</p> <p>Effective: Students perform very well at end of year exams. My students and I laugh a lot in class. Most difficult thing for me is dealing with personal stories of students...I am so proud of their perseverance despite some terrible life situations</p> <p>Mentor: My mentor saw things in me I never dreamed of. She encouraged me to continue my education</p> <p>Admin: The "red tape" is ridiculously cumbersome!</p>		Other						
<p>Relatives:</p> <p>Feelings: I enjoyed the experience.</p> <p>Effective: I believe that in my first year I was able to open a new door for the high achieving students.</p> <p>Mentor: My mentor was helpful for the FAQ's. How do you fill out the purchase order; where are the supplies. I am an independent person who was receptive and grateful of my mentor's advice but I did not solicit advice on teaching style.</p> <p>Admin:</p>	85	ABCTE	3	Few	7.04	6.57	7.50	6.88
<p>Relatives: I like the school I am teaching in. I love being in the classroom with my kids, but I find the politics of education to be the driver behind teachers quitting and leaving the profession.</p> <p>Feelings: I love being in the classroom with my kids, but I find the politics of education to be the driver behind teachers quitting and leaving the profession.</p> <p>Effective: I feel like teaching is a good fit for me. I teach mostly elective courses and I have a high number of students in those classes. I also have a</p>	15	T	4	Some	7.29	6.86	6.38	8.38

<p>reputation for teaching difficult classes, so given that I have hard classes, but still a high number of attendance, then I would assume that I would be an effective teacher</p> <p>Mentor: I basically did not have a mentoring experience. It has been very poor. Therefore, I don't really have an opinion of how it influenced my teaching</p> <p>Admin: I hold a high amount of respect for our curriculum coordinator for influencing me in my teaching. She is always helpful when asking for instructional ideas and the conversations I have with her seem to always reinspire my passion for teaching.</p>								
<p>Relatives:</p> <p>Feelings: I signed a contract. Excellent career, but I think the demands put on teachers by administrators cause teachers to get out of the job.</p> <p>Effective: I think I am becoming more effective every year. It is a good fit for me, I like working with kids.</p> <p>Mentor:</p> <p>Admin: Administration-far too many demand, they need to let teachers teach.</p>	31	T	4	Few	6.25	4.71	6.25	7.50
<p>Relatives:</p> <p>Feelings: I absolutely love teaching and feel as though it is a very important profession that often goes unrecognized.</p> <p>Effective: I feel as though I am quite effective in what I do based upon the feedback I have received from past students.</p> <p>Mentor: My mentoring experiences were very positive.</p>	34	T	4	Few	6.71	6.14	7.00	7.00

<p>Admin: Administration changes...class size changes...policies change. I definitely believe having a very positive, hardworking and supportive administration makes a huge difference!</p>								
<p>Relatives: That it takes hard work, patients, and dedication to helping students achieve. Feelings: It is a hard job that takes a lot of dedication to make sure each student learns what they need to know to be successful in life. It is also rewarding to see that look in a student's eyes when they finally understand a concept. Effective: I am able to build relationships with my students that help motivate them to learn and makes them feel like they can confide in me when they need help. Mentor: My mentor experience influenced my teaching by helping me to improve my classroom management skills as well as improve my ability to increase the DOK levels. Admin: My administrator has helped me a lot throughout my teaching career. She helped me to develop to become a more rounded teacher</p>	41	T	4	Some	7.29	6.86	7.63	7.38
<p>Relatives: Not a whole lot Feelings: Overall, it is a rewarding career. However, it continues to be challenging due to student's lack of interest in caring about their education. Trying to get the parents on board is often difficult which makes it very difficult to motivate the students to care. Effective: I do feel frustrated and continue to inquire about other fields within education. I cannot see myself teaching for many more years. I would possible turn toward administration or</p>	49	T	4	Some	3.88	3.71	4.00	3.88

<p>curriculum development. Mentor: I had a wonderful student teacher who was very motivating and inspiring. As a first year teacher I participated in a new teacher institute which was very helpful. People: just the lack of parent support is frustrating.</p>								
<p>Relatives: Feelings: I believe if it is called a career it needs to be properly funded. Effective: I believe I am a very good teacher because I do more than teach science. I teach practices that will help them be successful in other classes and their lives. Mentor: Terrible. My mentor did not help me at all. It influences my teaching by forcing me to develop all my lesson plans and materials from scratch. Admin: Administration/State Educational Policymakers. Trying to keep up with all the new standards sent down by the state is mind boggling. We are expected to get our students to improve but are not told how we are to go about it.</p>	58	T	4	Many	7.25	6.71	7.25	7.63
<p>Relatives: Feelings: I enjoy teaching but I am planning on owning my own business. One in which I will always hire the graduate students from my technical high school I currently teach at. Effective: I think I am a very effective instructor. I also feel that I can offer more to society by creating job opportunities. Mentor: Excellent support but lacked the "traditional" experience due to the fast paced certification I received.</p>	83	T	4	Few	7.21	6.00	8.00	7.63

Admin:								
<p>Relatives: How to be caring and supportive of my students. How to push them to achieve their potential.</p> <p>Feelings: I enjoy teaching as a career. I'm able to live comfortably, while at the same time I feel as though I'm contributing something to those around me. I feel as though I have an impact on how these young men and women are being shaped. I feel I am giving them the tools to succeed and make the world a better place.</p> <p>Effective: I have a very good knowledge of the information I'm teaching and I can approach it from many different points of view allowing many different learners to succeed.</p> <p>Mentor: My mentor has had a huge impact on my teaching style. I adopted most of his techniques, and have made them my own over the past few years. He was always there to support me in the classroom. He gave me criticisms which encouraged me to grow and learn from my mistakes.</p> <p>Admin: I feel as though the government has been trying to apply business like policies to the educational setting. However, the policies don't work because students aren't employees. In my opinion, we don't hold the students and the parents accountable for their own learning. I feel like as time has passed even in my short career the more policies which are enacted the more they hamstring me.</p>	95	T	4	Some	6.96	6.57	7.38	7.13
Relatives: It takes a lot of work but there are a lot of rewards. You should teach if you have a passion	96	T	4	Some	7.46	6.71	7.13	8.25

<p>to teach. You should not teach if you view it as a paycheck.</p> <p>Feelings: I love the challenge. If you love it, it is a great way to spend the workday. If you view it as a paycheck, please get out and quit messing up the youth of America.</p> <p>Effective: I am an effective teacher. It took me a while to get here but I knew that I would be a teacher in high school.</p> <p>Mentor: If you mean the state required mentor for the first couple of years, then I could take it or leave it.</p> <p>Admin: Policies that allow me to give students opportunities to learn chemistry are great. Policies that are oriented towards the latest educational jargon and based on "educational research" generally create a lot of work that prevent me from actually teaching and assessing my students.</p>								
<p>Relatives: My dad was a teacher then principal. I learned how to handle students and their parents. Also what to expect at a school; I never wore rose colored glasses for grandeur expectations.</p> <p>Feelings: Honestly love my job and school I teach at.</p> <p>Effective:</p> <p>Mentor:</p> <p>Admin:</p>	103	T	4	Many	6.75	6.29	7.00	6.88
<p>Relatives: Teaching is difficult, time consuming, and rewarding.</p> <p>Feelings: Despite the challenges, I still love to teach.</p> <p>Effective: I am as effective as I believe is possible for a 4th year teacher to be. Naturally, I expect to</p>	116	T	4	Many	6.58	5.00	8.00	6.75

<p>continue to improve each year. I am a patient good-natured person who likes teenagers, and I believe that I have talent, both in understanding whether students understand, and skill in giving feedback to develop each student's understanding.</p> <p>Mentor: I have had both a negative and a positive experience in mentoring. My first year, the teacher who volunteered to mentor me spent the majority of our time together talking about herself, and complaining. She did not have certification in my area, and after wasting a lot of time listening to her talk about her private life (unsavory,) I began to avoid her if I could. I learned how not to behave professionally from her. The following year, I moved to another school in the district and my mentor there was amazing. She shared her planning time, and we planned units together - she offering her many years of effective teaching experiences, and yet receptive to ideas and tweaks suggested by me. We worked, and got ideas implemented. We continue to collaborate to this day.</p> <p>Admin: I also didn't realize that teaching would include many classes, and meetings during the year, but also over the summer "vacation." While "optional," a new teacher knows that her tenure rests on the perceptions of administrators who are in great part interested in what she does outside of the classroom. That just sucks.</p>								
<p>Relatives: Feelings: It can be draining, but I love it. Effective: I think teaching is a good fit for me. For a person who has been only teaching for 4 years, I think I'm somewhat effective, but I think I can be</p>	117	T	4	Some	5.58	5.00	5.88	5.63

<p>better.</p> <p>Mentor: I had a unique experience in that I had 2 different mentoring teacher and both mentors had completely different philosophies and teaching styles. I definitely experienced 2 completely different spectrums of teaching and I would say that it helped me grow as an education.</p> <p>Admin: my science department has had the greatest influence on my outlook as an educator - I have great coworkers who are willing to share, collaborate, and participate in lively discussions</p>								
<p>Relatives: That patience is important and that every child matters. I also learned that discipline is important and needs to be immediate in order to help correct behavior.</p> <p>Feelings: It is undervalued and believed to be easy.</p> <p>Effective: Sometimes I feel very intrinsically rewarded. Other days it is difficult to feel that this really makes a difference.</p> <p>Mentor:</p> <p>Admin: Administration- they are amazing! We have a principal that values autonomy in teaching and allows us to creatively reach out to the students. We are supported and praised</p>	10	Alt-College	4	Many	7.38	6.57	7.88	7.75
<p>Relatives: That fostering learning is an important quality that should be shared with students.</p> <p>Feelings: I enjoy teaching, I don't enjoy parents who want to blame lack of student enthusiasm on the teacher</p> <p>Effective: Teaching is a good fit for me. I love science and I love to talk about things that will one day affect their lives.</p> <p>Mentor: It was nice to see other teachers</p>	12	Alt-College	4	Few	7.50	7.00	7.63	7.75

<p>experiencing the same first year teacher things. It made me feel like I was not alone.</p> <p>Admin: he policies set out are sometimes hard to attain for every student and this creates frustration and a lack of try once a student is told they have failed to many times.</p>								
<p>Relatives: that it is a lot of work, basically saw my aunts and grandmothers grading lots of papers, attending lots of school functions, taking classes in summers, but also that it was very rewarding. I can remember being at stores with them and former students would always come and tell them thanks for taking time out to help them in school.</p> <p>Feelings: I enjoy working with young people and sharing my experiences and knowledge, I also like the summers off to pursue backpacking adventures. However, teaching does not pay enough. I also have no health insurance because I cannot afford to insure my kids and myself, so I do without. II have a huge amount of student loans</p> <p>Effective: Yes I think it is a very good fit. I enjoy teaching and would plan to make it a career if it paid better and had better benefits such as health insurance. I will only do it for a couple more years though due to the low pay. It is rewarding to see my former students going on to college and I like hearing of their successes.</p> <p>Mentor: not much to say I really had no mentoring to speak of. was more of a formality on paperwork. I think I am a better teacher than my mentor.</p> <p>Admin:</p>	40	Alt-College	4	Few	7.71	7.14	7.88	8.13
<p>Relatives:</p> <p>Feelings: Pay isn't very good for the time and work</p>	48	Alt-College	4	None	7.63	7.29	7.00	8.38

<p>that is put in, but I don't see myself getting the same kind of gratification out of another career.</p> <p>Effective: Teaching is a good fit for me. I get to keep learning and share my learnings with others. I really feel like I am making a positive impact on many lives</p> <p>Mentor: Negative. My mentor did nothing to help me and neither of them were in my subject area.</p> <p>Admin: administration plays a large part in the effectiveness and the support needed for a young teacher.</p>								
<p>Relatives: Stay positive.</p> <p>Feelings: I love teaching</p> <p>Effective:</p> <p>Mentor: Didn't have one</p> <p>Admin:</p>	67	Alt-College	4	Few	7.96	7.86	7.88	8.13
<p>Relatives: Didn't have one</p> <p>Feelings: it is the right career for me for right now, but I am unsure whether I will teach for the remainder of my career. Teaching can be rewarding and I love working with students and helping them learn and grow. However it can be frustrating as well. The demands placed on a teacher make this an exhausting career. During the school year I feel like I am living at "warp speed" and that is not a way that I want to live the rest of my life. If I can figure out how to meet the demands of the profession in a more balanced way then I might be able to retire from teaching.</p> <p>Effective: I feel quite effective with my average to above average students, but honestly they would have learned with any other teacher as well. I feel the best about myself when I can be effective with</p>	109	Alt-College	4	Some	6.67	5.71	6.75	7.50

<p>my struggling students. I often do not feel effective with them during the school year but the last 2 years have surprised me. Despite feeling ineffective during the year, when we all return from summer break and those students seek me out I realize that perhaps I had more impact than I knew.</p> <p>Mentor: My mentoring experience at the high school level was very positive. I am lucky to work in the same high school that I student taught in and work closely with the teacher who was my mentor.</p> <p>Admin: demands on my time... this comes from every level... the # of students I teach, the expectations of my department, the lack of help from some members of my biology department, the expectations of my administration and school, the # of papers I have to bring home to grade, the difficulty I have reaching some students (when they fail I feel like I have failed), etc.</p>								
<p>Relatives: It is a great way to make a difference and a way that you can make a mark in a community.</p> <p>Feelings: Because I love teaching science and we cannot live on one income. I love teaching but will probably burn out in 5-10 more years. It takes so much energy and time to do a great job. I don't want to be an ineffective and grouchy teacher that is just there for the money, so when I no longer love what I do, I will move</p> <p>Effective: It is currently a great fit. I am generally effective but there is always room for improvement so I work closely with my co-workers to improve my instruction.</p> <p>Mentor: My first mentor hated his job and find that</p>	1	ABCTE	4	None	7.38	6.86	7.75	7.25

<p>most of his classes are filled with useless degenerate students. He was depressing so I found other teachers to ask for help other than my assigned mentor. The teacher across the hall from me really helped me survive my first two years. I might not have made it without her.</p> <p>Admin: My first direct supervising principal had great faith in me and was very supportive and gave me great suggestions on how to overcome the difficulties that I encountered. The district level administration and school board do not seem to have a good understanding of what it is like to actually run classes in the current district. This means that we are not always supported in the manners needed to be fully effective.</p>								
<p>Relatives: It's hard work, but if you like what you do it doesn't feel like "work"</p> <p>Feelings: I love teaching! You have to want to be around students and be involved in the things they do in order to help them achieve their goals.</p> <p>Effective: I'm not sure of my effectiveness in my own mind, but I must be doing something right if I have the same students in different courses each year.</p> <p>Mentor: I had a negative mentor experience. The first school I taught at absolutely did not care about me as a person or as a teacher; I filled a vacancy and that was it. I asked for help from our coach only to be ignored and was never able to discuss anything with my mentor</p> <p>Admin: having a principal and other administrative staff are all things that I welcome. I hope to continue teaching in the future as I feel as though I</p>	19	ABCTE	4	Some	6.33	6.29	6.25	6.38

am making great progress in bettering the educational system.								
<p>Relatives: Secure career, there's a pension, grading papers was a common activity on weekends</p> <p>Feelings: I have secured a contract, love what I do, enjoy working with my colleagues</p> <p>Effective: Every year I get better. As I get better my students get better. I have been able to shape my units around how the students learn. My first year, I thought I had to lay out every fact I had ever learned and make sure the students knew that I knew all of these facts. In reality the core concepts were missed. Now I break apart those core concepts and help the students apply them</p> <p>Mentor: My mentor was amazing. I essentially had a built in support team.</p> <p>Admin:</p>	26	ABCTE	4	Few	6.71	6.29	6.63	7.13
<p>Relatives: My brother liked teaching and coaching</p> <p>Feelings: Most days I love it.</p> <p>Effective: The last two years my students have been above 90% proficient in biology so I would say that I'm proficient. Yes it is a good fit. If I didn't enjoy my job, I don't think my teaching would be as effective.</p> <p>Mentor: Did not really effect anything. Just hoops to jump through.</p> <p>Admin: Some policies are a waste of time, while others are beneficial.</p>	39	ABCTE	4	None	8.00	8.00	8.00	8.00
<p>Relatives:</p> <p>Feelings: Enjoy it, mostly. Don't enjoy extra duties before and after school. Wish I had more time included in the work day for planning and grading.</p> <p>Effective: feel I am effective for most students who</p>	8	T	5	Some	7.21	6.71	7.25	7.75

<p>are willing to put forth effort. I am well suited for teaching, as far as I can tell. I enjoy the students, subjects, and feel that I am good at helping people understand difficult material. I can break down more complicated topics into easier to understand pieces.</p> <p>Mentor: I feel that my mentoring was better for venting than for impacting my classroom teaching. I learned some things that I would not be comfortable doing--letting kids sleep in class, too far off task behaviors.</p> <p>Admin:</p>								
<p>Relatives:</p> <p>Feelings: Sometimes difficult to see as a career because no advancement, no matter how well you teach or perform, there is no advancement in pay or grade-unless you get a master's to specialize in counseling/administrative. Someone down the hall could be the worst teacher in the world and they make twice as much as you because they have more years than you. Sometimes frustrating when the bills come in!!</p> <p>Effective: I feel I make a difference in student achievement, it fits my personality...you have to be the bad guy but still give kids an opportunity to redeem themselves. I do not take their ups and downs personally.</p> <p>Mentor: Positive mentor in student teaching, she was organized, planned, well thought out. Helped give me a good base for success.</p> <p>People: Parents 1st and foremost. My own personal feeling about education and its importance. I feel intrinsically motivated to teach. Not really</p>	11	T	5	Few	7.96	7.29	8.38	8.25

<p>something that motivated me from a financial standpoint.</p>								
<p>Relatives: Feelings: I love to teach. I feel like I have a natural talent for it and I enjoy the kids (most days...). But as a career, I don't know how much longer I will stay. I get frustrated with politics and administration and I'm tired of being poor. I also feel very under-valued and I don't feel like I'm treated as a professional in my building, in my district, and even in society. I'm not certain if this is a universal symptom of education or if it's unique to my district, but the more I talk to people, the more I lean to the former. Effective: Though I feel that there is room for improvement, I feel that I am a very effective teacher. I do feel like it is a good fit for my skill set. I love to design learning step by step. I love to collaborate with other teachers and make good ideas better. Mentor: I have had very little mentoring experience. Admin: I would say that administration and policies have affected my outlook on education AS A CAREER the most. While I have a passion for teaching, I'm not sure that it can outweigh the other nonsense for a long term career. On the other hand, I'm not sure what else I would do.</p>	16	T	5	Few	7.17	6.43	7.38	7.50
<p>Relatives: Feelings: I enjoy teaching Effective: Teaching is a great fit. I am an effective teacher. Mentor: My experience with a mentor did not</p>	17	T	5	Some	9.00	9.00	9.00	9.00

<p>affect me either way. It was simple a step in the process. I am intelligent enough to seek out what I need in those who possess the qualities I am improving.</p> <p>Admin: Education policies have affected my outlook on education as a career. I am an advocate for the student so the outlook will not change my purpose only my path.</p>								
<p>Relatives:</p> <p>Feelings: It's my job.</p> <p>Effective: Positive.</p> <p>Mentor: Positive.</p> <p>Admin:</p>	21	T	5	Few	7.96	8.00	8.00	7.88
<p>Relatives: Put NA or nothing in rows</p> <p>Feelings:</p> <p>Effective:</p> <p>Mentor:</p> <p>Admin:</p>	28	T	5	None	7.58	6.00	7.88	8.50
<p>Relatives:</p> <p>Feelings: I think it is a very rewarding career. It's unfortunate that there isn't very much respect for teachers.</p> <p>Effective: I think I am very effective. I work very hard at my job.</p> <p>Mentor: My student teaching had the most positive effect on my teaching.</p> <p>Admin:</p>	38	T	5	Some	8.21	8.29	8.13	8.25
<p>Relatives:</p> <p>Feelings: I love my job. It is very difficult; it takes a lot of time away from your family. Expectations are very high for teachers when obviously they are not the only factor that influences a students learning. The pay is terribly low. A person will</p>	42	T	5	Few	6.88	6.57	7.63	6.50

<p>either find joy in teaching or become so frustrated that they will choose another career.</p> <p>Effective: Some days I feel like I have done a great job, but even then I try to look at what I could do next time to make it better. Some days I feel like I haven't gotten through to anyone. I think that overall teaching is a good fit for me but I always think I could have done better.</p> <p>Mentor: I really was glad for the mentor/mentee program. I was really not prepared to deal with some of the problems that I encountered my first year and my mentor had been teaching for many years and she shared her experience with me. She really helped me a lot.</p> <p>Admin: If you have administration that is not supportive it makes your job very frustrating and almost not worth it. If your classroom is too big it's overwhelming and very difficult to address the needs of every student. The expectations from the state are also very influential.</p>								
<p>Relatives:</p> <p>Feelings: I think that it is career that does not receive much credit as a career. I think most of "professionals" think we as teachers only work 9 month of the year and we are done like burnt toast. I feel that it is rewarding in and of its self. The day to day learning is a big part of the satisfaction that comes from this career. Unfortunately I feel the financial support does not fully compensate for the work created and performed by us teachers.</p> <p>Effective: I think that I am very good teacher and that it fits me well. I think that I can generally reach students and make the learning a little more fun and</p>	51	T	5	Some	7.71	7.57	7.88	7.63

<p>enjoyable. I think that I bring the initial energy to the class which I try to rub off on the students.</p> <p>Mentor: I was not as pleased with my mentoring experience. I felt that my mentor was intimidated by me coming in as a rookie but having the Physics Teaching background. I felt restricted by her and limited as to what I could and could not do. She was not supportive to me trying new teaching ideas. I think it was a negative influence on me.</p> <p>Admin:</p>								
<p>Relatives: that it is a lot of work, both in and out of the classroom. My dad became a professor because he loved being at school so much, so I also learned to love learning and school</p> <p>Feelings: They offered me a contract and I need a job. I also enjoy teaching most days. I feel that it is an honorable career that people in general do not appreciate enough. I hate the joke "Those who can, do. Those who can't, teach." I feel that it takes a special type of person to both relate to hundreds of high school students while also being able to impart knowledge to each one.</p> <p>Effective: I've had many students tell me, after they've already left my class, that I was a very good teacher</p> <p>Mentor: I had a wonderful mentor who taught me how to organize my classroom so that I could focus my efforts on content and teaching. Even though she has now retired, I still contact her for help and to simply visit</p> <p>Admin: My school also has a very high number of administrators and I feel that this is not a desirable situation.</p>	53	T	5	Some	6.75	6.29	6.75	7.13

<p>Relatives: Feelings: I think as a professional it is changing and those changes may affect my feels on it as a career. Teaching is not what it was, and I think the more the government gets involved in it the more difficult it is to make it fun and exciting for students and not just teaching to a test to keep your job. Effective: I feel that most of the time I am an effective teacher. There are students though I know that I do not get through to, and that is difficult to deal with. I just hope that another teacher can do what I was unable to do for that child. Mentor: I have a wonderful mentor at my school, who I can talk to about anything. So I think it has had a positive effect on my teaching. Admin: To see someone within my department who has taught for 43 years and is still doing it and the students still enjoy is something to look forward to. The school I teach at ask the student body every year to write down teachers in the building that have had an effect on their lives, each year to receive notes that your students have written about you is so encouraging to continue to work hard everyday</p>	60	T	5	Some	6.67	6.14	6.25	7.50
<p>Relatives: Feelings: Commitment to complete program. It's difficult and I am ready to end it. Effective: Teaching is a good fit just not at the high school level. Mentor: My mentoring experience was minimal and did not influence my decision. Admin: Policies. It's all about numbers and money. This is a big business.</p>	70	T	5	None	8.04	7.86	8.13	8.13

<p>Relatives: Feelings: It's my career and I enjoy it! I like it! I think I might be a life-er. If I could see myself getting different certifications to spice things up, like working with special ed or alternative ed. students. Effective: My personality is not a "Planner" style. It's a "what's going to work and be creative and keep kids attention for this topic" kind of style Mentor: My professor evaluated me, at one point and said "I am question myself as to why I thought you were ready for this." My classroom management was horrible and I felt horrible. Went to a different school, was mean with the rules, and eventually very few issues. The mentor-ship program was therein formality, but I had a lot of informal mentors and they were much more effective. I would have relied on it more if I didn't have those informal mentors. Admin</p>	97	T	5	Some	6.96	6.57	6.63	7.50
<p>Relatives: Feelings: This is my job and I am beginning to enjoy it! I feel like it is a great career however the attitudes of parents, students, and communities are continuously changing making it more and more difficult on teachers. Effective: I sometimes wonder if I am actually a good teacher. I am always my own worst critic but I still don't know if I was correct in choosing this as my profession. Mentor: I didn't really have a "Mentor" teacher when I began, but I have a great staff that I work directly with and they give me lots of ideas and</p>	114	T	5	Some	6.17	5.71	6.38	6.25

<p>help with anything that I could ever need and I do the same for them. Admin: I feel that the states view on education and our strides to meet their hurdles have greatly affected my view on the education system. I feel that we continually water things down in order to ensure that students learn what is needed to be successful on a state test in order for the school to get high marks on their AYP and also ensure that they get their full funding.</p>								
<p>Relatives: Feelings: I like teaching my students and I am comfortable doing so. However, there are times when I feel overwhelmed with the government's unrealistic goals. With some students it is very difficult to make them want to learn subjects like mitosis and photosynthesis. I spend so many hours trying to find new ways to engage my students, which takes time away from my husband and kids. Effective: I think that I am an effective teacher. Eighty-three percent of my Biology students made a grade of proficient or advanced on the state's Biology End-of-Course exam. Mentor: Honestly, I do not think that it had a big impact. I asked my mentor a few questions every now and then, but that was about it. Admin:</p>	115	T	5	None	7.75	7.14	8.00	8.13
<p>Relatives: I learned that is it hard work. Teachers need to have an altruistic motivation because the monetary rewards are not commensurate with the level of education required. For me, teaching is a second career. I enjoyed 12 years in private industry as a project manager using my engineering</p>	4	Alt-College	5	None	7.33	6.71	7.63	7.63

<p>degree. Teaching was always my ultimate destination.</p> <p>Feelings: I enjoy teaching teenagers. I treat them as young adults and hold them accountable.</p> <p>Teachers are increasingly expected to be entertainers. I don't entertain kids. I equip them. I don't get paid for the extra things that I do to help my students learn and achieve. My students ALWAYS perform better than coaches students, yet I am expected to share the materials that I have developed with other teachers (coaches). They don't share anything with me. They get terrific tools for differentiation that I took time to make, I don't get anything for my investment of time (weekend & summers) to create those material. They get them without having to create them. I get nothing from them to help me in my classroom. Where is the equity in that?</p> <p>Effective: I am a good teacher. I work hard to be. I gauge my effectiveness on my students' level of performance. Teaching is a great fit for me.</p> <p>Mentor: It did not help.</p> <p>Admin:</p>								
<p>Relatives: Not much other than the extraordinary amount of work it takes after hours</p> <p>Feelings: It's a job where I can help shape the future through my students. I will be physically, mentally, & emotionally worn out LONG before retirement, but will be sad to leave when I go</p> <p>Effective: I have been told numerous times in evaluations that I have a knack for inspiring kids. I think because of my degree I have more knowledge base in my content areas than the average person</p>	7	Alt-College	5	Some	7.00	5.57	7.25	8.00

<p>with a secondary science degree. This allows me to bring more personal experience & stories regarding content than many of my colleagues. I have no doubt that this helps students understand & learn.</p> <p>Mentor: had a wonderful mentor teacher who acknowledged that I had many skills as an older teacher and didn't try to make me do everything her way. She just gave me suggestions when I asked for help.</p> <p>Admin: I had some good and not so good administrators that did influence my outlook. When they are pushing for busy work I tend to dislike the job, and when they believe in professional integrity and that I have a good work ethic,</p>								
<p>Relatives: My aunt is a retired elementary teacher. She did not make much money for the amount of years she taught. Good teachers care about their students.</p> <p>Feelings: I love to teach. It's getting better every year</p> <p>Effective: The ability to explain things to different levels of students is a gift, not a sign of intelligence. I know my subject very well and can explain concepts effectively to most students.</p> <p>Mentor: My mentor never stepped foot in my classroom. She was also an art teacher and I am science. She is a great lady but was not a big help. I highly respect our high school history teacher and ask him for advice.</p> <p>Admin: Administration matters. The most terrible year I've had in my 5 years was when I was NOT backed by my principal over a situation with a student. I was miserable all year. I almost quit</p>	13	Alt-College	5	Some	7.46	6.71	7.75	7.88

teaching over one principal and one student.								
<p>Relatives:</p> <p>Feelings: Under contract. I very much enjoy teaching.</p> <p>Effective: I feel that working with the alternative high school students, I am very effective because they know I care about them personally and academically. Teaching is something I have always done in some way or another.</p> <p>Mentor: I had a wonderful mentor teacher who acknowledged that I had many skills as an older teacher and didn't try to make me do everything her way. She just gave me suggestions when I asked for help.</p> <p>Admin: I had some good and not so good administrators that did influence my outlook. When they are pushing for busy work I tend to dislike the job, and when they believe in professional integrity and that I have a good work ethic</p>	75	Alt-College	5	Some	6.50	5.14	7.50	6.38
<p>Relatives:</p> <p>Feelings: I lucked into teaching and I am glad it is what I do for a living</p> <p>Effective: I try to be effective</p> <p>Mentor: positive</p> <p>Admin:</p>	94	Alt-College	5	None	8.83	8.71	9.00	9.00
<p>Relatives:</p> <p>Feelings: Would choose to do nothing else</p> <p>Effective: My first year definitely had my doubts- after no turning back. Once you reach one difficult child- nothing is more rewarding.</p> <p>Mentor: Good person to problem solve with, not much help when it came to doing the mountains of Sped paperwork</p>	106	Alt-College	5	Some	7.54	6.43	7.75	8.38

Admin:								
<p>Relatives: It is one of the hardest but rewarding jobs ever</p> <p>Feelings: I always swore I would not be one. My mother, father, and sister are teachers. This job fell in my lap when I needed something. I always say everything happens for a reason. It has been a very tough job, but I love doing it.</p> <p>Effective: The first three years I was not for sure if it was for me. I felt lost since I was the alternative and did not have an experience, but I have come to see that my schooling and life experiences have actually helped in my teaching. Now I can keep leaning and growing every year. I do feel that I can use my stories to help apply real life experiences to science and help the kids understand more.</p> <p>Mentor: I did not have one per say. My mentor moved between buildings so I picked my own and asked her if I could "use" her as my mentor. She has been great</p> <p>Admin: I believe a good administration is a big help. One who is disciplined in their job but that explain and elaborate on criticism, but can also make staff feel good when they do something well. I believe whatever policies are made they need to be followed without bias.</p>	107	Alt-College	5	Few	6.46	6.43	6.25	6.75
<p>Relatives:</p> <p>Feelings: I enjoy teaching, but every year it seems more and more students become harder to control and motivate.</p> <p>Effective: Yes, it's a good fit for me as I can relate to students on a personal level and make learning more enjoyable for them.</p>	110	Alt-College	5	None	6.83	6.43	6.50	7.38

<p>Mentor: My mentor helped me through my first year of teaching by just answering my questions and offering input where necessary. Admin: Administration at my school is helpful and that has definitely kept me in the career.</p>								
<p>Relatives: Feelings: Awesome. I am well respected, and I'm having a great time. Effective: I am a very effective teacher. It would be a shame for me and for my community if I were not a teacher. Mentor: I didn't have one. Admin: The administration at my high school is very supportive. I would not be able to continue if I were not free to teach in the way I find most effective.</p>	56	Alt-Other	5	None	8.17	7.86	8.75	8.13
<p>Relatives: Feelings: they require a hell of a lot more of you than they're willing to pay you for. (Both chuckle) and give you time to do. I love it. I wouldn't change. I'm glad I made the switch. People talk like we have the summer off. That's just basically they're giving us comp time for all the extra time we put in all year." Effective: a scale of 1-9 being a seasoned pro I'm probably about a 6. I've still got plenty to learn but I'm feeling confident that I'm going to be able to do just fine, I've gotten good reviews from my principal this year and they recommended me for rehire so I guess that I gotta be doing something right. Mentor: Admin:</p>	Joe-Phone	Alt-College	1	Few	6	NA	NA	NA

<p>Relatives: Feelings: I love teaching it's becoming a thorn in my side now and I'm getting a little bit bitter because I just I cannot believe. I went out on this limb because I really believe there are just not very many good math and science teacher Effective: Mentor: Admin:</p>	<p>Sue- Phone & Survey</p>	<p>T</p>	<p>1</p>	<p>Some</p>	<p>7</p>	<p>NA</p>	<p>NA</p>	<p>NA</p>
<p>Relatives: Feelings: I was ready to quit after my first year and I was ready to quit after my second year. I kept ahh think. I was transition a lot during my first year of teaching I had 8 different assignment in the course of one year in two different buildings. so it was...ah I was surprised at the lack of support by a lot of veteran teachers and administration for new teachers. That was one of the biggest challenges for me. I see myself in teaching but I would like to find a better fit for myself. I really love it on good days. and I would love to kind of piggy back I would love to give my kids more experience outside and with the environment and to shift my focus into ecology and conservation with teaching or biology kinda get away from physical sciences. Out of generalized survey courses of science more specialized Effective: I don't know that I have every had an experience where I feel like I necessarily fit. That May be it's because I have not had enough time anywhere where I fit like I've tend to see myself as I'm doing better I've been in middle school for so many years now Mentor:</p>	<p>Mary FG</p>	<p>Alt- College</p>	<p>4</p>	<p>Few</p>	<p>7</p>	<p>NA</p>	<p>NA</p>	<p>NA</p>

<p>Admin: I am so frustrated so I'm walking out of my classroom and my administrator is walking by and I was just reading responses and I go up to her and say; "Did you know that the sun moves and that's how we get seasons?" Cause I was floored that my kids would think the sun moves and that's how and she said "Oh really" and I thought oh wow I can't fault these 12 -13 year olds I'm talking too if a 40 something year old woman just really engaged the fact that sun moved to cause the earth's seasons</p>								
<p>Relatives: Feelings: It's not even that I wasn't expecting I knew there would be things and that it was going to be difficult but I did not know exactly what it would be like and now I am learning. I think there is a good chance I'd like to eventually end back up with animals but still doing more of the education. So like being an educational director at a sanctuary or at a zoo or something. Or at least where that was my main focus. Not be ahh before I was doing mainly like caretaking and bookkeeping. Like managerial things and caretaking and some education Effective: I refuse to just accept that I am not meant to do it then. I don't think I can know for sure until I have taught for at least 5 years because you know you can have a rough student teaching. With .parents on the drug run or go to another school Mentor: Admin:</p>	<p>Emma- FG</p>	<p>T</p>	<p>1</p>	<p>Few</p>	<p>7</p>	<p>NA</p>	<p>NA</p>	<p>NA</p>
<p>Relatives: Feelings: think I suck right now but I want to get</p>	<p>Caden- FG &</p>	<p>Alt- College</p>	<p>1</p>	<p>Few</p>	<p>6</p>	<p>NA</p>	<p>NA</p>	<p>NA</p>

<p>better I still have a lot to learn at how to deal with students and their circumstances and find out what going on I. knowing how to talk to different kids to get the work done the way I want it done in the right way. I can't just yell at them all that cause doesn't work for everybody and like emotions and things like that .trying to deal with them in the classroom so I have a lot to do in how to deal with students and how to get what I want out of them but I like it and I want to keep on doing it and I want to get better</p> <p>Effective: teaching there for 30 some years or possibly going the admin route after I taught for 10 or 15 years. I do think that side of education is kind of I am anal about things kind of OCD. So very organized. I think I could do that at some point. Definitely I will be teaching for a while</p> <p>Mentor:</p> <p>Admin:</p>	Survey							
<p>Relatives:</p> <p>Feelings: I would like to stay there and like my ideas like perfect my craft, really just get some good lessons that I am happy with feel comfortable with what I am doing. Start Gathering roots around here with like organizations and places that could help with my teaching and then maybe do different branching outs so I am half way through with my masters I want to finish that.</p> <p>Effective: you know the discussion should go this depth I feel like they are pulling me down. Like I don't want to redo it's like I understand the merging and it's not like my way or high I'm never like that but at the same time if you have all of the students</p>	Ellie-FG & Survey	T	1	Some	7	NA	NA	NA

<p>complaining not that they do even or how hard it's Kind it's of figuring out where is a good medium but at the same time I do want to push them so I want them to be challenged in finding that good place</p> <p>Mentor:</p> <p>Admin: And it's like everyone is helpful. Like you got xxx who is awesome and you got the best principal in the world you know seriously that sounds</p>								
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Appendix GG

Respondents Who Saw Teaching as a Job

Appendix GG

Respondents who saw teaching as a job ($n = 14$)

ID	Certification	Years' Experience	TSES Score (7.05±.821)	Student Engagement (6.58±.903)	Instructional Strategies (7.19±.933)	Classroom Management (7.34±.957)
72	ABCTE	1	7.96	7.71	7.63	8.50
92	Alt.-Other (TFA)	1	7.33	7.43	7.13	7.25
104	T	1	6.17	5.71	6.50	6.25
88	T	2	6.71	6.00	7.50	6.25
37	T	3	8.17	7.71	8.50	8.25
66	T	3	7.75	6.86	8.25	7.88
71	T	3	7.00	7.00	7.00	7.00
105	Alt-College	3	7.21	7.14	7.38	7.00
31	T	4	6.25	4.71	6.25	7.50
21	T	5	7.96	8.00	8.00	7.88
53	T	5	6.75	6.29	6.75	7.13
70	T	5	8.04	7.86	8.13	8.13
75	Alt-College	5	6.50	5.14	7.50	6.38
114	T	5	6.17	5.71	6.38	6.25

Appendix HH

Comparison of Efficacy Scores for Self-Reporting Non-Effective Teachers

Appendix HH

Comparison of Efficacy Scores For Those Who Stated They Were Not As Effective

	Efficacy Scores for Entire Sample (<i>n</i> - 91)			Efficacy Scores Those who Feel Not as Effective (<i>n</i> = 22)		
	Means	Scoring Below the Mean		Means	Scoring Below the Mean	
		#	%		#	%
TSES	7.05+.821	46	(50.5)	6.59	17	(77.3)
Student Engagement	6.58+.903	53	(58.2)	6.09	17	(77.3)
Instructional Strategies	7.19+.993	41	(45.0)	6.67	14	(63.6)
Classroom Management	7.34+.957	38	(41.8)	6.8	13	(59.1)

Appendix II

Comparing Comments on Education as a Career with Years of Experience

Appendix II

Comparing Comments on Education as a Career with Years of Experience

Category	Data	Comments
ID	74	Feelings: It is a tough career Effective: I was not as effective this year as I would like to be, but since it was my first year I feel that is normal.
Cert	T	
Years	1	
Modeling	Few	
TSES	6.26	
Student Engagement	5.71	
Instructional Strategies	5.13	
Classroom Management	7.88	
ID	91	Feelings: LOVE IT Effective: Teaching is a great fit, but I need more practice at it to be most effective
Cert	T	
Years	1	
Modeling	Some	
TSES	6.92	
Student Engagement	5.29	
Instructional Strategies	7.88	
Classroom Management	7.38	
ID	115	Feelings: I like teaching my students and I am comfortable doing so. However, there are times when I feel overwhelmed with the government's unrealistic goals. I spend so many hours trying to find new ways to engage my students, which takes time away from my husband and kids. Effective: I think that I am an effective teacher. Eighty-three percent of my Biology students made a grade of proficient or advanced on the state's Biology End-of-Course exam.
Cert	T	
Years	5	
Modeling	None	
TSES	7.75	
Student Engagement	7.14	
Instructional Strategies	8.00	
Classroom Management	8.13	
ID	94	Feelings: I lucked into teaching and I am glad it is what I do for a living Effective: I try to be effective
Cert	Alt.-College	
Years	5	
Modeling	Some	
TSES	8.33	
Student Engagement	8.71	
Instructional Strategies	9.00	
Classroom Management	9.00	

Appendix JJ

Comparing Classroom Management with Efficacy

JJ1: Comments from Respondent with High Efficacy

JJ2: Complete Set of Comments on Classroom Management Compared with Efficacy

Appendix JJ1

Comparison of Classroom Management and Comments From Respondents with High Efficacy

Categories/comments	ID	Cert	Years of Exp.	See Modeling	TSES	Student Engagement	Inst. Strategies	Classroom Mgmt.
I have 3 rules and allow the students to determine their protocol as to learning desires and they also develop the consequences for failure to follow.	9	Alt-College	3	Many	8.17	7.14	8.38	9.00
I give my students respect	17	T	5	Some	9.00	9.00	9.00	9.00
I create an atmosphere of respect for others do not tolerate disrespect for me or for other students at all.	56	Alt-Other	5	None	8.17	7.86	8.75	8.13
I do community building and set rules and norms for the classroom.	70	T	5	None	8.04	7.86	8.13	8.13
Treat students how I want to be treated. I use a business approach.	94	Alt-College	5	None	8.83	8.71	9.00	9.00
I treat my students with respect. I listen to my students. I try to build an atmosphere that is comfortable and all students can get to know each other	98	T	3	Some	8.04	7.57	7.63	8.75

Appendix JJ2

Complete Set of Comments on Classroom Management with Efficacy Scores

Categories/comments	ID	Cert	Years of Experience	See Modeling	TSES	Student Engagement	Instructional Strategies	Classroom Management
Classroom Management								
Most of my strategies are preventive; I am upfront from day one about what is and is not allowed and we immediately establish certain routines	33	T	1	Some	7.00	6.29	7.00	7.50
I post my rules explicitly in the classroom, and I am more firm in the first quarter than in the latter quarters.	74	T	1	Few	6.29	5.71	5.13	7.88
Posted rules, warning system, "the evil eye", mutual respect	91	T	1	Some	6.92	5.29	7.88	7.38
I set expectations and explain them to the students. They are posted in the room. I am fair and consistent in enforcing consequences and rewards. I use a lot of proximity to manage side conversations.	93	T	1	Many	6.96	6.00	7.38	7.63
Modeling is huge in my classroom. I use proximity often and redirection of behaviors and attention. I also use random techniques for calling on students to answer questions and participate in class.	101	T	1	Some	7.00	6.43	7.13	7.25
I manage the classroom by arranging student seating and grouping. I used any strategy I could imagine: small groups, pair share, non-linguistic, round robin, read-alouds, hands-on, technology, lecture, presentations...just anything I could	104	T	1	Some	6.17	5.71	6.50	6.25

use to change things up and keep it interesting.								
My first year of certified teaching (2010-2011), I struggled with frequent disruptions to the learning environment, poor student work ethic, disrespectful behavior, bullying, etc. I tried many different things, but unfortunately it is very difficult to re-establish policies and procedures during the school year, so I was constantly challenged. I think that colleges should include an entire 16 week course solely devoted to classroom management.	123	T	1	Some	7.08	6.71	8.50	6.25
Students are urged to be responsible for their actions and take control of their situation. Students are redirected often. Students do receive teacher as well as school detentions.	73	Alt-College	1	Few	6.25	5.71	6.88	6.00
I believe that keeping students busy is the greatest way to manage a classroom. When students are engaged in an activity and learning, they are far less likely to cause behavioral problems. Additionally, when problems do arise it is important to focus on the root of the behavior and not solely on discipline.	79	Alt-College	1	Few	5.75	5.57	5.63	5.88
Positive community atmosphere.	92	Alt-Other	1	Some	7.33	7.43	7.13	7.25
First step is an atmosphere of mutual respect between the teacher and the	43	ABCTE	1	Few	6.88	6.57	7.00	7.25

students (at least for secondary school, in my experience).								
if the students are co-operative there is no problem. I am very understanding and flexible. If they want to cut up, run the class and distract others, they go to the office.	47	ABCTE	1	Few	6.13	4.71	8.00	5.88
We are in the beginning phases of PBS this year and I am on the PBS team. I will be using several positive reward systems & hope they work. Again, I am just starting out and have a lot to learn!	59	ABCTE	1	Few	7.58	7.57	7.50	7.63
Use assigned seats. Positive Referrals for helpful students Three-tier disciplinary structure 1. Warning 2. Lunch Detention 3. Write-up and/or Dismissal from Class	72	ABCTE	1	Few	7.96	7.71	7.63	8.50
I establish rules and procedures that the students are expected to follow.	90	ABCTE	1	Some	7.42	6.43	7.25	8.50
Nothing	112	ABCTE	1	None	6.50	6.14	6.25	6.75
Same strategies I used in my career in business (last position was Plant Manager of a chemical plant), clearly communicate expectations, respect each student, maintain high standards of performance and conduct for students and myself.	122	ABCTE	1	Few	7.83	7.29	7.25	8.75
I use a seating chart, walk around my classroom to make sure students are on task, and I try to be as motivating as possible.	44	T	2	Some	5.75	5.00	5.50	6.75
I thoroughly explain my rules to my	57	T	2	Some	6.63	6.00	7.00	6.88

students. I also keep them posted throughout the school year so they are constantly reminded.								
I run a loosely controlled room, meaning that I like to give the students a certain degree of freedom, but I have ultimate control. I try to make sure I know of everything going on in the classroom. That way the kids feel like we have a mutual relationship of respect, but that they cannot take advantage of me.	81	T	2	Few	6.75	6.14	6.50	7.38
I have three rules: Be Safe, Be Respectful, Be Responsible. Students receive 4 hall passes a semester; this keeps students in the classroom and on task. 1st incident= verbal warning, 2nd incident= student is moved from current seat, 3rd incident= student goes to the office and parents are contacted. If the incident happens during a lab and is a safety issue the student goes straight to the office.	88	T	2	Some	6.71	6.00	7.50	6.25
I plan a lot of activities for each class: lecture with note taking, group work, labs, etc. I believe students should not have "down time".	111	T	2	Many	6.58	6.43	6.38	7.00
I try to have procedures for everything. I also try to build relationships with the students so they will perform for me.	77	Alt-College	2	Few	4.75	4.71	4.75	4.75
I spend the first few days trying to get to know the students and have them	84	Alt-College	2	Few	6.29	6.14	5.88	6.88

initiated into procedures from day 1. I use many nonverbal cues during whole class activities.								
Nothing	24	Alt-Other	2	None	7.21	6.71	6.38	8.50
I try to keep things low-key and use a minimum of rules. I do my best to model respect for others and try to treat students as I would like to be treated in their place.	78	ABCTE	2	Few	6.08	5.86	6.25	6.25
Positive reinforcement, reward (privileges)	35	T	3	Few	7.83	6.00	8.63	8.50
I have set rules and do not budge and I implement a seating chart.	36	T	3	Some	8.08	7.71	8.38	8.25
Nothing	37	T	3	None	8.17	7.71	8.50	8.25
I have assigned seating. This allows me to place students either close to or apart from other students as needed. I redirect when needed. I make phone calls home. I walk the classroom instead of standing near the front. I have set rules and guidelines.	45	T	3	Some	6.46	5.86	6.75	6.75
Verbal warnings, detentions, trips to the office. I try to be consistent. I find classroom management to be very difficult at times. I should contact parents more often.	62	T	3	Few	5.17	5.14	5.00	5.38
I don't. I have to constantly remind them to be quiet or do what I ask. It takes a lot out of me and constantly grates on my patience.	66	T	3	Some	7.75	6.86	8.25	7.88
Being organized, chunking lessons, small break-out processing sessions	71	T	3	Few	7.00	7.00	7.00	7.00

I use humor to keep things loose. I try to calm the situation by talking with the student or his or her parent. If the student is out of control, I send them to the principal.	76	T	3	Few	5.92	5.29	6.50	5.75
I start with clear expectations and boundaries. I also make sure to structure as much of the class time as I can to prevent the opportunity for misbehavior.	80	T	3	Some	7.42	7.43	7.50	7.38
I use one rule in my class, respect yourself, respect others. All other rules and guidelines fall under this basic principle. I try as a teacher to always modify and change my classroom management skills and each class has a variety of different attitudes and personalities that help make the learning environment more conducive	86	T	3	Some	7.50	7.29	6.63	8.38
My main classroom management strategy is to preempt misbehavior. I do this by being prepared for every single lesson in advance and by trying to keep down time to a minimum. When the students are kept busy from the minute they walk into my class, I have very few management problems. The problems I do end up having are usually going to happen anyways.	89	T	3	Few	7.50	5.86	8.00	8.50
.I treat my students with respect. I listen to my students. I try to build an atmosphere that is comfortable and all	98	T	3	Some	8.04	7.57	7.63	8.75

students can get to know each other. I have high expectations, but everything isn't always about the concepts it's also about life lessons. I try to keep class time interesting by trying new labs and doing a lot of hands-on activities.								
I explain my expectations right away and make it known that if they don't follow my rules, they are welcome to sit in the office, but they won't learn anything that way. I also ask what kind of expectations they have of me. Also they are responsible for their learning and while I am here to facilitate the learning... it is still up to them.	113	T	3	Many	6.33	6.00	6.50	6.38
I try to establish definite rules about what is acceptable behavior and what will not be tolerated in the classroom	125	T	3	Some	7.50	7.14	7.75	7.88
I have 3 rules and allow the students to determine their protocol as to learning desires and they also develop the consequences for failure to follow. I have established procedures for classroom entry, homework, questions and general management.	9	Alt-College	3	Many	8.17	7.14	8.38	9.00
I use movement around the classroom. I am almost never just stuck behind my desk. I monitor student progress while I move around the classroom.	105	Alt-College	3	Some	7.21	7.14	7.38	7.00
I use humor and try to make the students wish to stay on my good side.	25	Alt-Other	3	None	7.00	5.43	7.75	7.63

Advocate of Harry Wong	102	Alt-Other	3	Some	6.67	6.43	6.75	7.00
The students who take physics are generally those with few discipline problems. As such I allow the students some freedom because 'they know what type of behavior is appropriate.'	85	ABCTE	3	Few	7.04	6.57	7.50	6.88
I mostly use the strategy of keeping students engaged and active.	15	T	4	Some	7.29	6.86	6.38	8.38
Respect	31	T	4	Few	6.25	4.71	6.25	7.50
The main focus of my management system is respect.	34	T	4	Few	6.71	6.14	7.00	7.00
Proximity, buddy rooms, routines, seating charts, incentives	41	T	4	Some	7.29	6.86	7.63	7.38
I use many of Fred Jones techniques as well as Ron Clark and just recently Whole Brain teaching techniques.	49	T	4	Some	3.88	3.71	4.00	3.88
Consistency. Making expectations and rules known and presented. I do not waiver for any reason or student.	58	T	4	Many	7.25	6.71	7.25	7.63
I present student expectations from the beginning and am fair and respectful when enforcing those. I like to deal with student misbehavior in the room and as last resort send them to the office. I am forceful in the beginning and that pays off later when the students realize they cannot push the set boundaries.	83	T	4	Few	7.21	6.00	8.00	7.63
I make sure I have a well-designed lesson plan before each class period. I make sure my students know the rules	95	T	4	Some	6.96	6.57	7.38	7.13

of the classroom and what I expect of them. I have many routines set up to allow my students to be familiar with my processes so they know what to expect.								
Keep students engaged and active. Show interest in students as individuals.	96	T	4	Some	7.46	6.71	7.13	8.25
At our school we have a list of codes all students must abide by.	103	T	4	Many	6.75	6.29	7.00	6.88
Students have rules, of course, that are explained, posted and put in writing. Students must sign, and their parents sign to acknowledge awareness of the rules. I rarely involve parents beyond this level, and don't believe their involvement is beneficial, since truly they are outside of the situation. However, an interesting and busy lesson is the best management strategy	116	T	4	Many	6.58	5.00	8.00	6.75
Consistent routines and procedures consistent consequences for students getting to know the students as people	117	T	4	Some	5.58	5.00	5.88	5.63
Routine, bathroom passes, verbal warnings, and a structured agenda displayed to the class.	10	Alt-College	4	Many	7.38	6.57	7.88	7.75
Students have an assigned seat and a syllabus that they are expected to follow. Parents(<i>she meant students</i>) must have their parents sign the syllabus saying that they understand and agree to the class room rules.	12	Alt-College	4	Few	7.50	7.00	7.63	7.75

Students may listen to mp3 players while working on individual work, but this is a privilege that can be taken away.								
Mostly I talk loud and clear. As soon as the bell rings we get busy.	40	Alt-College	4	Few	7.71	7.14	7.88	8.13
BIST	48	Alt-College	4	None	7.63	7.29	7.00	8.38
Routine.	67	Alt-College	4	Few	7.96	7.86	7.88	8.13
Each student is different so I use a lot of strategies and find the one that works best for each student that needs behavior management. I have high expectations for ALL of my students and they are outlined at the beginning of the year	109	Alt-College	4	Some	6.67	5.71	6.75	7.50
I use culturally responsive strategies, proximity control, frequent questioning, frequent task change, clear postings of expectations and procedures.	1	ABCTE	4	None	7.38	6.86	7.75	7.25
I consider myself highly entertaining. Students want to be in my room and pay attention to me to see how I will present material. When students are disruptive during work time I have a bell. First ring is a warning, any subsequent rings of the bell adds five seconds students must stay seated and quiet after the release bell before leaving my room...if anyone talks/giggles/makes any noise	19	ABCTE	4	Some	6.33	6.29	6.25	6.38

counting starts over.								
You give respect to get respect . I lay out the ground rules day one and I follow through. I talk to my students as individuals and never just bark commands.	26	ABCTE	4	Few	6.71	6.29	6.63	7.13
My expectations are consistent and try to mix up lecture, activities, etc. to keep students engaged.	39	ABCTE	4	None	8.00	8.00	8.00	8.00
Bellwork students on task at all times sleepers get to stand up missing work gets parent contact try to be understanding give and require respect to all persons	8	T	5	Some	7.21	6.71	7.25	7.75
Warm-ups, Follow Tardy Policy, Homework due at the beginning of class. Consistency with my class	11	T	5	Few	7.96	7.29	8.38	8.25
I rely very heavily on routines . I teach them pretty extensively at the beginning of the year. Though I've been surprised that this works for High Schoolers, I also have students write sentences . I usually make a big production of getting out a post-it note and writing down what they have to write. I try to make it funny and use big words	16	T	5	Few	7.17	6.43	7.38	7.50
I give my students respect	17	T	5	Some	9.00	9.00	9.00	9.00
Cooperation .	21	T	5	Few	7.96	8.00	8.00	7.88
Nothing	28	T	5	None	7.58	6.00	7.88	8.50
I maintain a safe energetic learning environment. We establish the rules and the students know that if they	38	T	5	Some	8.21	8.29	8.13	8.25

break the rules, there are consequences. If they choose to break the rule, then they are also choosing that consequence.								
I expect students to be respectful to everyone in the classroom including the teacher	42	T	5	Few	6.88	6.57	7.63	6.50
I like to try and use the love and logic strategy of management. Basically I have few rules	51	T	5	Some	7.71	7.57	7.88	7.63
I tend to really praise and notice when students are doing a good job so that they strive to do that behavior more often. I also try to nip little things in the bud by physically going over to the student and quietly saying something, or even just looking at a kid, if that works	53	T	5	Some	6.75	6.29	6.75	7.13
I have guidelines given at the beginning of the year I use proximity I give warnings I call parents I send students to office I give detentions	60	T	5	Some	6.67	6.14	6.25	7.50
I do community building and set rules and norms for the classroom.	70	T	5	None	8.04	7.86	8.13	8.13
There is a management system in place, but I try to address issues before it needs to go into effect	97	T	5	Some	6.96	6.57	6.63	7.50
I am a very patient teacher and allow a lot more things than some other teachers do. I do believe in having a controlled classroom though and try to keep an atmosphere where every student feels comfortable to learn and	114	T	5	Some	6.17	5.71	6.38	6.25

express their thoughts and opinions. I tend to yell at times which I know is not a model teacher trait, but it does tend to get the point across. If I have students that are being extremely disruptive I will have them go in the hall or directly to the office. I will also call home and talk to parents if there are students that are tending to be a disruption on a regular basis.								
On the first day of school I explain my class rules and I stick to them. I am very strict starting out and I lighten up as the year progresses if the students conduct themselves in a respectable manner.	115	T	5	None	7.75	7.14	8.00	8.13
I make it very clear from the outset that if we have a student-teacher conflict, I win. I let them know that "I win" not because I like to order children around. "I win" because it's my job to make sure everyone does well in my class. In order to do that, I require (and enforce) appropriate behavior. 'No' mean no, not maybe.	4	Alt-College	5	None	7.33	6.71	7.63	7.63
Seating chart determined after 2 weeks of classes so I can know the students & how they interact before placing them in a seat. Regular individual feedback on negative behavior.	7	Alt-College	5	Some	7.00	5.57	7.25	8.00
I will stop talking and look first. Sometimes I will say their name.	13	Alt-College	5	Some	7.46	6.71	7.75	7.88

Issues that a repeated-- I talk to the student privately. If that doesn't help, I notify the principal and he talks to them. I rarely have a disturbance that results in the student leaving my room and going to the office.								
Give expectations, follow rules with consistency, and use some BIST strategies.	75	Alt-College	5	Some	6.50	5.14	7.50	6.38
Treat students how I want to be treated. I use a business approach	94	Alt-College	5	None	8.83	8.71	9.00	9.00
Positive Behavioral Techniques Safe Crisis Management Positive Correction	106	Alt-College	5	Some	7.54	6.43	7.75	8.38
I set my rules to the students up front. There is not any tolerance with defiance. I have a certain order of discipline depending on the defense.	107	Alt-College	5	Few	6.46	6.43	6.25	6.75
I model respect for students and expect them to do the same for everyone else.	110	Alt-College	5	None	6.83	6.43	6.50	7.38
I create an atmosphere of respect for others. My high energy and passion for physics ignites the students' interest. I create lessons and labs that require attention and careful thought to master. I do not tolerate disrespect for me or for other students at all.	56	Alt-Other	5	None	8.17	7.86	8.75	8.13
Some teachers complain about discipline problems but I've not had a referral to the principal this year... It's not that I take a lot of guff it's just that you know you pick your battles	Joe-Phone	Alt-College	1	Few	6	NA	NA	NA

<p>You just have to gain some respect in the classroom and know when to pick your battles and know what's appropriate and what's not appropriate and when they do cross that line then let them know. If you can keep them busy doing something it cuts down on your discipline problems a whole lot, but I've been pretty fortunate that I haven't had too many discipline problems to speak of.</p>								
<p>Kids are really doing some bad things and you finally you give them lunch detentions and you've done this and they tell you about your classroom management well I'm using Harry Wong it works if you get backed up when you have too but when you don't and they come back with a gator aid or a candy bar. And the give one kid an ISS for the same offense that they give another kid on OSS or another kid a lunch detention and another one just a slap on the hand, the kids begin to see this isn't right so then they figure hey you know I you know it's a crap shoot I might get an ISS I might not get anything I'm going to go ahead and do it. They are out of control. Kids need fences</p>	<p>Sue-Phone & Survey</p>	<p>T</p>	<p>1</p>	<p>Some</p>	<p>7</p>	<p>NA</p>	<p>NA</p>	<p>NA</p>
<p>I am really conscientious of a lot of</p>	<p>Mary</p>	<p>Alt-</p>	<p>4</p>	<p>Few</p>	<p>7</p>	<p>NA</p>	<p>NA</p>	<p>NA</p>

different instructional strategies and actually restricted by my floundering in classroom management of being able to use a lot of what I know because I can't relinquish that much control of the classroom but I would say that is my strongest piece, student engagement is next strongest and definitely management is definitely my weakest.	FG	College						
Management is the big thing I am trying to work on and I think I'm getting a little better but definitely a ways to go.	Emma-FG	T	1	Few	7	NA	NA	NA
I have a short temper. And by the time it gets to 7th hour ahhh they get a brunt of my anger and I need to work on that. But Teaching 7 hours straight, seeing a 150 kids I'm exhausted. I'm tired of saying the same thing over and over again. And it's not their fault and they're tired too because they've been sitting in classrooms for 7 hours. so I've got a work on how I dealt with things later in the day when I am grouchy. That's my problem right now	Caden-FG and survey	Alt.-College	1	Few	6	NA	NA	NA
And management I feel again that teaching is like a fine wine as you get older I'm hoping that I'll tend to get better with it and that maybe even I'll have a little more umm I'm older so you'll listen to me.	Ellie-FG and survey	T	1	Some	7	NA	NA	NA

Appendix KK

Comparison of Respondent's Quantitative Statistics and Classroom Management

Appendix KK

Comparison of Respondents' Quantitative Statistics and Classroom Management

Scored Below the Mean (<i>n</i> = 38)						Scored Above The Mean (<i>n</i> = 53)					
Certification			Years of Experience			Certification			Years of Experience		
Type	#	%	Yrs.	#	%	Type	#	%	Yrs.	#	%
Traditional	21	(55)	1	9	(24)	Traditional	32	(60)	1	8	(15)
Alt.-college	7	(19)	2	7	(19)	Alt.-College	13	(24)	2	2	(4)
ABCTE	8	(21)	3	8	(21)	ABCTE	5	(9)	3	11	(21)
Alt.-Other	2	(5)	4	9	(23)	Alt.-Other	3	(7)	4	13	(24)
			5	5	(13)				5	19	(36)

Appendix LL

Table Comparing Qualitative Comments on Classroom Management to Years of Experience

Appendix LL Table Comparing Qualitative Comments on Classroom Management to Years of Experience								
Categories/comments	ID	Cert	Years of Experience	See Modeling	TSES	Student Engagement	Instructional Strategies	Classroom Management
I motivate, inspire, and challenge. I also provide the support they need when the weaker students contact me outside class.	56	Alt-Other	5	None	8.17	7.86	8.75	8.13
I am the decisive element in my classroom. My mood sets the tone for the day My first year definitely had my doubts- after no turning back. Once you reach one difficult child- nothing is more rewarding.	106	Alt-College	5	Some	7.54	6.43	7.75	8.38
Guide them academically. Let them know I believe in them & care about their success-	7	Alt-College	5	Some	7.00	5.57	7.25	8.00
I think that it is my job to make my students enjoy science	115	T	5	None	7.75	7.14	8.00	8.13
To try and guide them to use their own skills/ tools to be successful. What works and what doesn't for them and help them find and hone those skills	97	T	5	Some	6.96	6.57	6.63	7.50
Facilitator and providing each student with the opportunity to grow. Teaching is a good fit just not at the high school level.	70	T	5	None	8.04	7.86	8.13	8.13

I am a facilitator. My job is to provide opportunities for my students to be successful.	38	T	5	Some	8.21	8.29	8.13	8.25
Do my best to see that all understand Do my best to answer questions or find someone else who can help Provide a good learning environment	8	T	5	Some	7.21	6.71	7.25	7.75
My role is to facilitate the success of each student. I cannot do the work for them, but I can provide guidance and encouragement along the way.	109	Alt-College	4	Some	6.67	5.71	6.75	7.50
I facilitate as many instructional strategies as possible so that every learning style can be successful.	48	Alt-College	4	None	7.63	7.29	7.00	8.38
If they are struggling I try to take time to help them individually. If they are capable and not putting the time in I ask why? I give them attention and a lot of praise for good work. Some just want someone to care that they are doing something. Many students who are capable or do poorly I believe have no one to cheer them on at home.	40	Alt-College	4	Few	7.71	7.14	7.88	8.13
I am a facilitator. I provide an interesting, challenging and encouraging environment. Students are responsible for taking advantage of the opportunities put in front of them. I will help those who ask for help. I will talk to those who are struggling but I will not badger them. I believe student performance is based on the choices that students make.	96	T	4	Some	7.46	6.71	7.13	8.25

I need to be aware of each student's educational needs so I can alter the way I deliver the educational content so they can be successful and I also need to make myself available and approachable so they feel comfortable and have the time to come ask for help. I also try to stay in contact with their parents.	15	T	4	Some	7.29	6.86	6.38	8.38
I provide the opportunity, encourage students as much as possible, try to make learning as fun and as appealing as possible. I also never give up. There is no deadline for learning. When a student is ready to care, I am ready to help.	25	Alt-Other	3	None	7.00	5.43	7.75	7.63
I am a facilitator in their learning.	9	Alt-College	3	Many	8.17	7.14	8.38	9.00
I try to present the material to each student so they can absorb and understand the importance of each class. I try to interject real world use of the subject covered in the class. I also stress that sometimes the subject may not be used in their job but the ability to learn things is important in all jobs	125	T	3	Some	7.50	7.14	7.75	7.88
I am the person responsible for giving the assistance and motivation to help make my students successful. I cannot make them learn, but I can give the quality education the helps the students to become successful	86	T	3	Some	7.50	7.29	6.63	8.38
I think that each year I become a more								

<p>effective teacher by constant reflection and feedback on what I do and how I can improve it. I think that by being a successful teacher in the long run, it is about constant changing and understanding what it means to be effective to the students, as they are always evolving and changing along with society.</p>								
<p>I facilitate their learning; they must embrace and internalize it. I help them find their way to forming their own understanding of the content. I challenge them to think critically.</p> <p>Teaching is a good fit; I am not satisfied with my abilities and will continue to strive for better throughout my career.</p>	80	T	3	Some	7.42	7.43	7.50	7.38

Appendix MM

Qualitative Comments on Student's Success Compared with Efficacy Scores

Appendix MM

Qualitative Comments on Student Success Compared with Efficacy Scores

Categories/comments	ID	Cert	Years of Experience	See Modeling	TSES	Student Engagement	Instructional Strategies	Classroom Management
Student Success								
I need to keep excellent records so that I don't let anyone slip through the cracks and get overlooked when they start showing warning signs like not turning in homework or skipping class	33	T	1	Some	7.00	6.29	7.00	7.50
If I teach them responsibility and control my classroom, most students will be able to learn, so I have a crucial role in a student's success.	74	T	1	Few	6.29	5.71	5.13	7.88
Guiding light; life coach; counselor	91	T	1	Some	6.92	5.29	7.88	7.38
I'm there to facilitate student learning.	93	T	1	Many	6.96	6.00	7.38	7.63
The facilitator. It is my responsibility to make sure all of my students are successful	101	T	1	Some	7.00	6.43	7.13	7.25
I think the educator provides a calm, reliable, fair and consistent environment. I know I was not always as good at this as I wanted to, but it is what I strive to do. I	104	T	1	Some	6.17	5.71	6.50	6.25

think students really respond to a safe classroom where they can be themselves and assume their role in the "community" of the classroom without judgment or stigma. Like I said, I was better at this sometimes over others.								
I need to be a consistent, organized, and encouraging teacher.	123	T	1	Some	7.08	6.71	8.50	6.25
Providing students will the map to work through science problems including learning what science is and how to understand it.	73	Alt-College	1	Few	6.25	5.71	6.88	6.00
I believe that the role of a teacher should be more like that of a mentor as opposed to a lecturer (the holder of knowledge)	79	Alt-College	1	Few	5.75	5.57	5.63	5.88
instill the intrinsic motivation and invest them.	92	Alt-Other	1	Some	7.33	7.43	7.13	7.25
Student success is very much a two (or maybe even three) way street. I have an obligation to do everything in my power to help my students succeed, but that has to be coupled with an active attempt on their part to learn. One of the biggest parts of my job is convincing the students, in particular the reluctant ones, to hold up their end of that bargain. So, the primary task for the teacher is to help motivate the	43	ABCTE	1	Few	6.88	6.57	7.00	7.25

students to want to learn								
guide them to an understanding of the importance of getting a good study ethic for college and a good work ethic for those not planning on attending college.	47	ABCTE	1	Few	6.13	4.71	8.00	5.88
I hope they not only learn the information required by the state for the class, but I also want them to gain confidence, responsibility and interest in science & other subjects.	59	ABCTE	1	Few	7.58	7.57	7.50	7.63
Coach, mentor, facilitator, and instructor all wrapped up in one.	72	ABCTE	1	Few	7.96	7.71	7.63	8.50
To motivate each student to take responsibility for their own learning, and to stimulate their interest and curiosity.	90	ABCTE	1	Some	7.42	6.43	7.25	8.50
nothing	112	ABCTE	1	None	6.50	6.14	6.25	6.75
I want to prepare them for life after high school, either in higher education or the workforce.	122	ABCTE	1	Few	7.83	7.29	7.25	8.75
understand science material and to become good citizens	44	T	2	Some	5.75	5.00	5.50	6.75
My role is to do whatever I can to make sure each student is successful. While I know I cannot control what my students choose to do at home, as far as homework, I believe it is my responsibility to work on their work in class and help them see the importance of completing assignments. When	57	T	2	Some	6.63	6.00	7.00	6.88

students choose not to do their work, I do not feel that I am responsible, since they are given the choice. If several students are not understanding the material we are working on, then I feel that it must be the way I am teaching the assignment and need to find a different way to reteach the same material.								
I think that I need to have high expectations so that they know they will need to work hard	81	T	2	Few	6.75	6.14	6.50	7.38
The student needs to know that my classroom is a safe environment for learning. The student also needs to know that every student can succeed at science regardless of their background	88	T	2	Some	6.71	6.00	7.50	6.25
I think it is my job to get to know my students and help them become better students and people.	111	T	2	Many	6.58	6.43	6.38	7.00
I need to facilitate good activities and give the students every opportunity to succeed.	77	Alt-College	2	Few	4.75	4.71	4.75	4.75
I try to make sure that they know that I believe they can be successful; however I quickly become frustrated with lack of effort.	84	Alt-College	2	Few	6.29	6.14	5.88	6.88
nothing	24	Alt-Other	2	None	7.21	6.71	6.38	8.50
My first role is to encourage	78	ABCTE	2	Few	6.08	5.86	6.25	6.25

students to see the value of education.								
I see myself as a facilitator rather than a dictator	35	T	3	Few	7.83	6.00	8.63	8.50
Showing each student that I care about their success and them as an individual	36	T	3	Some	8.08	7.71	8.38	8.25
nothing	37	T	3	None	8.17	7.71	8.50	8.25
To give them the tools they need to investigate, think critically, question, take a risk and try something new.	45	T	3	Some	6.46	5.86	6.75	6.75
I hope to teach them the skills and science foundation that they will need to be successful in future classes and life.	62	T	3	Few	5.17	5.14	5.00	5.38
I am merely a vessel that helps them be exposed to new information and experiences. It is up to my students to make it worthwhile.	66	T	3	Some	7.75	6.86	8.25	7.88
to help every student reach their potential	71	T	3	Few	7.00	7.00	7.00	7.00
I give them the basic information they need and they have to find other information on their own. Essentially, I am a facilitator.	76	T	3	Few	5.92	5.29	6.50	5.75
I facilitate their learning, they must embrace and internalize it. I help them find their way to forming their own understanding of the content. I challenge them to think critically.	80	T	3	Some	7.42	7.43	7.50	7.38

I am the person responsible for giving the assistance and motivation to help make my students successful. I cannot make them learn, but I can give the quality education the helps the students to become successful	86	T	3	Some	7.50	7.29	6.63	8.38
It is my role to provide access to the required content for each class. My students are responsible for learning the material. I am then responsible for accessing whether or not my student are learning and then either:	89	T	3	Few	7.50	5.86	8.00	8.50
I see myself as a guide and a portal through the world of science. My hope is to help them find interest and walk away with at least some skills in reasoning and problem solving	98	T	3	Some	8.04	7.57	7.63	8.75
Mostly I am a facilitator. I offer them opportunities to learn as well as give them information. But they won't learn unless they make an effort or choose to learn	113	T	3	Many	6.33	6.00	6.50	6.38
I try to present the material to each student so they can absorb and understand the importance of each class. I try to interject real world use of the subject covered in the class. I also stress that sometimes the subject may not be used in their job but the ability to learn	125	T	3	Some	7.50	7.14	7.75	7.88

things is important in all jobs								
I am a facilitator in their learning.	9	Alt-College	3	Many	8.17	7.14	8.38	9.00
I offer them the opportunity to learn and I have high expectations for them. If they choose not to learn, I offer them extra help in a one-on-one setting. I cannot fix "I don't care". I want to see my students care about their learning and see the value in it. If they don't care, I can't change that. I don't think that I will always be able to "save" every student.	105	Alt-College	3	Some	7.21	7.14	7.38	7.00
I provide the opportunity, encourage students as much as possible, try to make learning as fun and as appealing as possible. I also never give up. There is no deadline for learning. When a student is ready to care, I am ready to help.	25	Alt-Other	3	None	7.00	5.43	7.75	7.63
State expectations up front Be Consistent in enforcement of expectations Offer and be available for help outside class time	102	Alt-Other	3	Some	6.67	6.43	6.75	7.00
I need to work at not just presenting information and hoping students understand. I need to lead the students to experiment and question	85	ABCTE	3	Few	7.04	6.57	7.50	6.88
I need to be aware of each	15	T	4	Some	7.29	6.86	6.38	8.38

student's educational needs so I can alter the way I deliver the educational content so they can be successful and I also need to make myself available and approachable so they feel comfortable and have the time to come ask for help. I also try to stay in contact with their parents.								
Facilitator	31	T	4	Few	6.25	4.71	6.25	7.50
My role is to be there for my students. I want all of them to achieve in class and work hard to help them do so.	34	T	4	Few	6.71	6.14	7.00	7.00
To be like a coach to them	41	T	4	Some	7.29	6.86	7.63	7.38
I believe my role in student success is to make science relevant to the students' lives so they will be motivated to continue to learn.	49	T	4	Some	3.88	3.71	4.00	3.88
Guidance Officer	58	T	4	Many	7.25	6.71	7.25	7.63
Facilitator. I can present and support (both academically and emotionally). It is ultimately on each student to do the work.	83	T	4	Few	7.21	6.00	8.00	7.63
My primary role is to teach my students how to learn and be self-sufficient with the information I'm teaching.	95	T	4	Some	6.96	6.57	7.38	7.13
I am a facilitator. I provide an interesting, challenging and encouraging environment. Students are responsible for taking	96	T	4	Some	7.46	6.71	7.13	8.25

<p>advantage of the opportunities put in front of them. I will help those who ask for help. I will talk to those who are struggling but I will not badger them. I believe student performance is based on the choices that students make.</p>								
<p>Letting them know what I expect out of them. In return they generally live up to my expectations</p>	103	T	4	Many	6.75	6.29	7.00	6.88
<p>My role is to do my best in presenting content in interesting and challenging but achievable ways. I am also available for students who need additional coaching, and I make that clear. I offer learning experiences during class time and very little is expected outside of class, so that responsibility of creating an inviting learning experience is mine. However, I do feel that the adage "you can lead a horse to water, but you can't make him drink" does apply to some science content, and to some students, at times. I try to show and explain why they all might want to care about how science applies to their lives - but not every concept, every day is doing that, for every student, and that is acceptable to</p>	116	T	4	Many	6.58	5.00	8.00	6.75

me								
caring big sister	117	T	4	Some	5.58	5.00	5.88	5.63
To provide them with the material as well as alternative examples and resources in order to help them understand.	10	Alt-College	4	Many	7.38	6.57	7.88	7.75
My role is to get them to see the importance of science even if they don't like the class and also to get them to see the big picture.	12	Alt-College	4	Few	7.50	7.00	7.63	7.75
Well, if they are struggling I try to take time to help them individually, If they are capable and not putting the time in I ask why? I give them attention and a lot of praise for good work. Some just want someone to care that they are doing something. Many students who are capable or do poorly I believe have no one to cheer them on at home.	40	Alt-College	4	Few	7.71	7.14	7.88	8.13
I facilitate as many instructional strategies as possible so that every learning style can be successful.	48	Alt-College	4	None	7.63	7.29	7.00	8.38
I am the leader	67	Alt-College	4	Few	7.96	7.86	7.88	8.13
My role is to facilitate the success of each student. I cannot do the work for them, but I can provide guidance and encouragement along the way.	109	Alt-College	4	Some	6.67	5.71	6.75	7.50
need to teach each student to be a functioning member of society,	1	ABCTE	4	None	7.38	6.86	7.75	7.25

teach them how to solve problems and to become literate in the basics of why the world around them works as it does								
Teacher, guide, friend. My door is always open to students. If I can reach them on a personal level, they are more willing to accept help in areas in which they struggle	19	ABCTE	4	Some	6.33	6.29	6.25	6.38
Making sure they get it. Not just regurgitating facts to me but explaining and making connections	26	ABCTE	4	Few	6.71	6.29	6.63	7.13
I have control over my classroom and it is my job to motivate them.	39	ABCTE	4	None	8.00	8.00	8.00	8.00
Do my best to see that all understand Do my best to answer questions or find someone else who can help Provide a good learning environment	8	T	5	Some	7.21	6.71	7.25	7.75
Give them an environment where they can learn, ask questions and have success on formative assessments.	11	T	5	Few	7.96	7.29	8.38	8.25
I see myself as a facilitator. I cannot do the work for them. I don't try. But I can make it so that they don't feel like it's impossible.	16	T	5	Few	7.17	6.43	7.38	7.50
building relationship and identifying needs	17	T	5	Some	9.00	9.00	9.00	9.00
consistency	21	T	5	Few	7.96	8.00	8.00	7.88
Blank	28	T	5	None	7.58	6.00	7.88	8.50

I am a facilitator. My job is to provide opportunities for my students to be successful.	38	T	5	Some	8.21	8.29	8.13	8.25
I try to get students to think scientifically. I think it can help them in all aspects of life. I encourage students continually to strive to do the best they possibly can.	42	T	5	Few Some	6.88	6.57	7.63	6.50
I see my role as a resource for my students	51	T	5	Some	7.71	7.57	7.88	7.63
Doing all that I can to have a relationship with each student because that will motivate them to do well for me	53	T	5	Some	6.75	6.29	6.75	7.13
I am a facilitator in the learning process. I am there to present the information and skills need to be success, but ultimately it is up to the student whether they chose to learn the material. You can lead a horse to water, but can't make it drink....you can teach a student, but you can't force them to learn. So I do my very best to present the information in a fun, engaging way, that is detailed for the students	60	T	5	Some	6.67	6.14	6.25	7.50
Facilitator and providing each student with the opportunity to grow.	70	T	5	None	8.04	7.86	8.13	8.13
To try and guide them to use their own skills/ tools to be successful.	97	T	5	Some	6.96	6.57	6.63	7.50

What works and what doesn't for them and help them find and hone those skills								
I am a facilitator that provides information for the students	114	T	5	Some	6.17	5.71	6.38	6.25
I think that it is my job to make my students enjoy science	115	T	5	None	7.75	7.14	8.00	8.13
I must establish a classroom environment that makes it clear to kids that I expect hard work and good results. I help them to learn, but they are responsible for their learning.	4	Alt-College	5	None	7.33	6.71	7.63	7.63
Guide them academically. Let them know I believe in them & care about their success-	7	Alt-College	5	Some	7.00	5.57	7.25	8.00
Motivator! I don't let students sit and not do their work, but at the same time, I don't give "busy work" assignments out	13	Alt-College	5	Some	7.46	6.71	7.75	7.88
Having high expectations, being a consistent person they can count on to expect the students to achieve.	75	Alt-College	5	Some	6.50	5.14	7.50	6.38
Every student can be successful if they work and try	94	Alt-College	5	None	8.83	8.71	9.00	9.00
I am the decisive element in my classroom. My mood sets the tone for the day	106	Alt-College	5	Some	7.54	6.43	7.75	8.38
If I can show them how to react and take responsibility then I consider that successful.	107	Alt-College	5	Few	6.46	6.43	6.25	6.75
I am there to assist them in	110	Alt-	5	None	6.83	6.43	6.50	7.38

learning. The bulk of the responsibility for learning falls on the students' shoulders.		College						
I motivate, inspire, and challenge. I also provide the support they need when the weaker students contact me outside class.	56	Alt-Other	5	None	8.17	7.86	8.75	8.13
I'm kind of their guide. If I was going to hire a fishing guide I would expect him to be successful get me the fish but I'm guy that's got to catch the fish. He can put me there. He can give me all the pointers, tips and lead me, but I do have to take some ownership and responsibility. And I feel students need to do that as well.	Joe-Phone	Alt-College	1	Few	NA	NA	NA	NA
I think schools all the responsibility lies on the teacher but I feel like parents really need to start being held accountable for their children too. In poor high poverty areas there is not support at home some of these kids have horrible home lives so you have to be everything to them and I was willing to do that because my son's grown and I have the time.	Sue-Phone & Survey	T	1	Some	NA	NA	NA	NA
I guess the role I would take is like more so a coach or a questioner but I'm also I hear what you are talking about And ultimately the fundamental	Mary FG	Alt-College	4	Few	NA	NA	NA	NA

<p>belief that all human beings are capable of learning and do so their whole life. if they are not doing it in your classroom of course some of it's your responsibility as the teacher. But Especially in urban schools we want to point well look at the parents look at this look at this look at this well still I have a job that I have been hired to do that I have chosen to do. So... When I'm not doing my job my students fail and I'm responsible for that. Despite all these other factors that umm go on. Are all of their failures my fault? No. So I guess that's where the yes and not comes in some of it is my responsibility some of it is not.</p>								
<p>Like if their grade in the class is a failing grade but it's because they won't turn anything in, that no I don't think it's my fault. When I've reminded them every single day--that's not my fault. it would be my fault if I made no effort when I see a continuing problem to at least attempt to contact their parents and make sure they're aware even though their parents are capable of doing that on their own. They're busy</p>	<p>Emma- FG</p>	<p>T</p>	<p>1</p>	<p>Few</p>	<p>NA</p>	<p>NA</p>	<p>NA</p>	<p>NA</p>

<p>I'm busy it's my job as a teacher to you know make sure that I've at least attempted to get them involved and help and make sure that they're aware. Uh so if I have not done that then yes I have failed them.</p> <p>it certainly makes me feel like I am failing them when I think ultimately the system is failing them. Cause there is no possible way if I can't force them stay after school cause I have tried that too . and they just won't. Their Parents say they have to and they still don't. Or their Parents don't care it could go either way. Umm then I don't know what else I can do and I feel like the system failed. All around it feels like a lot of failing.</p>								
<p>he past doesn't mean you automatically get an A in my class . so when they come to me with a problem. Here's my problem I don't get it. I'm an A student tell me the answer. it's not can you help me, where do I start,. it's what's the answer, not how do I do it . I don't want to give answer away I hate doing that. I want them to sit there and struggle for a while. I want to give them little</p>	<p>Caden- FG & Survey</p>	<p>Alt- College</p>	<p>1</p>	<p>Few</p>	<p>NA</p>	<p>NA</p>	<p>NA</p>	<p>NA</p>

<p>hints so in their minds so they get that sense of accomplishment and really understand it. “a” trying to coach them into understanding the problem but “b” trying to coach them into understanding that’s its ok to not understand</p>								
<p>I think that all their successes and all their failures are dependent upon me as their teacher. I think it’s like my job. Like it is 100% my job to make them succeed. Like that is why I am in the classroom. Realistically the amount of energy I have and the time in the day and in the class and there is a lot going on but it’s still my responsibility. It is my job as a teacher to make excited about it and for you learn and if you don’t learn it it’s my fault. And that’s kind of the Mentality he took on and I kind of always remembered though. I don’t do this all the time for sure as a first year and I struggle at it but I still think if they’re not engaged it’s my job to get them engaged. It is My job to teach them it if they understand it, that’s all on me, Success, failure that’s just the only way I can understand what I do. I guess and strive for.</p>	<p>Ellie-FG & Survey</p>	<p>T</p>	<p>1</p>	<p>Some</p>	<p>NA</p>	<p>NA</p>	<p>NA</p>	<p>NA</p>

