THE IMPACT OF TEACHER ACHIEVEMENT EMOTIONS ON THE CO-PRODUCTION OF EDUCATION SERVICES

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Abstract

Educational policy in the United States has evolved into a more intense system of accountability, resulting in an intensification of achievement emotions experienced by teachers. Two theoretical paradigms were used to analyze whether such emotions impact teacher effectiveness in the classroom: the control-value theory of achievement emotions and the theory of co-production. Path analysis was used to test the hypothesized model of teacher effectiveness. Two of the four hypothesized factors contributing to teacher achievement emotions, perceived level of control over instruction and perceived levels of student achievement, were found to be significant. The remaining two variables, attribution of responsibility for student achievement and the correlation between teachers' values and educational reforms, were non-significant. The post-hoc model removed these two non-significant factors and added additional paths from the variable teachers' perceived control to teacher's coping response and teacher effectiveness. The post-hoc model fit the data well as demonstrated by significant path correlations and goodness of fit scores. The path model was transferable across the study's demographic subgroups with the exception of experience level. Modifications were made to the post-hoc model for this subgroup by addressing paths to the coping response variable, and such changes resulted in a significant fit to the data for this subgroup. The results of this study underscore the need for teachers to feel in control of their teaching in order to implement effective teaching strategies. Therefore, educational policies that diminish or remove such control may impact teacher effectiveness. Under No Child Left Behind legislation, schools labeled as failing progressively remove more and more control from the teacher. The findings of this study indicate that such practices may be counterproductive and instead may be contributing to the problem of undesired student

achievement levels. Enhancing teachers' feelings of self-efficacy in the classroom is recommended for enhancing student achievement, as is looking at the issue through the lens of co-production. Co-production of education services posits that education is co-produced by the teacher *and* the student. Effective reforms in education, therefore, must address both sides of the teacher-student nexus.

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Chapter One: Introduction

Learning is a dynamic process necessarily involving contributions and interchanges between the teacher and learner. Education services are coproduced; inputs from both teacher and student are necessary in order for learning to transpire, and as such, learning cannot occur without such mutual involvements (Ostrom, 1996; Porter, 2011). If a teacher is actively engaged in sharing knowledge with a student, but the student is inattentive and unmotivated to participate in the process, learning cannot occur. Likewise, if the student is motivated and eager to learn, but the teacher is ineffective in transferring this knowledge to the student in a meaningful way, the co-production of learning cannot occur either. The co-production of education services is an interdependent process between teacher and student, requiring meaningful inputs from both the teacher and the student -- without such inputs, the co-production of education services cannot occur (Porter, 2011).

Equally important to the recognition of the co-production of education services is appreciating that emotions are an integral part of this process. Teachers and students alike experience achievement emotions, those emotions that are specifically connected to achievement activities or achievement results (Pekrun, 2006). The study of emotions in the classroom is essential because emotions directly impact teaching and learning (Frenzel, Goetz, Stephens, & Jacob, 2009; Pekrun, 2006). For example, emotions can impact how information is stored in one's memory and one's ability to recall information; emotions can impact one's motivation to engage in learning, as well as one's ability to attend to an academic task (Frenzel et al., 2009; Pekrun, 2006).

This study sought to examine teachers' emotions under current education reforms that emphasize teacher accountability for student achievement. This system of accountability includes assessing teacher effectiveness using student data such as standardized test scores and achievement growth models. Under current and proposed educational reforms, teacher evaluations, compensation, and job retention can be directly impacted by their students' performances. This intensification of accountability has considerable implications for teacher emotions.

Teaching is a stressful occupation (Hargreaves, 1998; Mahoney, Menter, & Hetall, 2003; Siu, 1995). A literature review on the causes of teacher stress by Siu (1995) indicates several occupational stressors for teachers: large class size, incompatible and excessive demands on teachers, frequent school reforms, student misbehavior, poor working conditions, time pressure, role conflict, excessive paperwork, lack of advancement opportunities, unrealistic expectations, feelings of inadequacy, poor relationships with colleagues, and poor administrative support. Such stress impacts the personal well being of the teacher and can lead to mental health issues, physical ailments, and increased absenteeism (Frenzel et al., 2009; Siu, 1995). On a societal level the damaging results of teacher stress and burnout can be costly due to a less efficacious system of educating children resulting from lost productivity, increased teacher turnover, and early retirement of teachers (Frenzel et al., 2009; Siu, 1995).

It is logical to assume, therefore, that additional pressure on the teacher to facilitate specific levels of student achievement with the consequence of failure being considerable (poor evaluation, less pay, possible termination) is likely to result in

intensified achievement emotions under these new educational reforms. From a co-production perspective, it is also logical to assume that the teacher, who recognizes that teaching and learning require active participation from both parties, will experience intensified emotions as the onus for proving student achievement falls onto the classroom teacher. Because current accountability measures only address the teacher side of the co-production model, the teacher may also feel intensified emotions with the knowledge that he or she has limited control over the student's contribution to the process.

Theoretical Background

Emotions experienced in an academic setting are categorized as achievement emotions; these are emotions bound directly to achievement activities and/or achievement outcomes (Pekrun, 2006). Central to this achievement perspective is the individual's pursuit of success and avoidance of failure. Using the achievement emotions perspective, this study sought to examine how teacher emotions are impacted from their subjective appraisal of achieving success (and avoiding failure) in reaching student achievement goals under current accountability processes.

Pekrun's (2006) theory postulates that an individual in an achievement setting will experience different emotions based on the subjective appraisal of success or failure with the academic task. This appraisal of success or failure is contingent upon two factors: perceived control over the achievement activity and the value attributed to the achievement activity. The control-value theory of achievement emotions posits that perceived controllability and the positive subjective value of achievement activities facilitate positive activity emotions (i.e., excitement, enjoyment); whereas, a perceived

lack of controllability and a negative subjective value of outcomes would catalyze negative outcome emotions (i.e., anger, anxiety).

By evaluating teacher emotions within the context of educational reforms, this study sought to contribute to Pekrun (2006) and Frenzel's (2009) body of work in the area of achievement emotions. The goal of applying the control-value theory of achievement emotions to this study is to examine the impact of increased accountability on teachers' emotions, and subsequently, the impact on his or her effectiveness in the classroom under such influences. The results of this examination will then be evaluated through the theoretical lens of co-production.

Implications of Study

This study has theoretical and practical implications. Theoretically, this study expands on Pekrun's (2006) and Frenzel's (2009) body of research on achievement emotions, as well as the co-production literature of Ostrom (1996) and Porter (2011). Currently in the literature, the impact of educational reforms on teachers' emotions has yet to be explored from an achievement emotions perspective, making this a unique contribution to the achievement emotions literature. Also, by examining the relationship between teachers' achievement emotions and their effectiveness in the classroom, an opportunity to examine current educational policy was presented.

The theory of co-production provided an ideal framework from which to discuss this focus on accountability in educational policy, most significantly as such policy has

emphasized only one side of the co-production model, and that is the teacher inputs of the co-production of education services.

There are also practical implications to studying the impact of teacher achievement emotions on teacher effectiveness. The overarching goal of educational reforms in the U.S. is to improve academic achievement for all students. If this goal is to be realized, it is worthwhile to assess how educational policies emphasizing teacher accountability impact teacher emotions and subsequent effectiveness. Such information has significant implications for current and future educational policy in the United States.

Chapter Two: Review of the Literature

Beginning with the new accountability movement of the late 1980s and continuing through current day with the Obama administration's blueprint for the reauthorization of the Elementary and Secondary Education Act, educational policy in the United States has evolved into an intense system of administrative oversight of every aspect of education, requiring greater responsibility for student achievement from schools and from educators (Fuhrman, 1999). Under current policy, the federal government requires public schools to facilitate annual, standardized exams to all students starting in third grade, and then systematically labels each school according to their students' performance on these exams (Schmidt, 2009).

Accountability measures in education have continued to intensify, as exemplified by the Federal government-sponsored grant program, *Race to the Top* (U.S. Department of Education, 2010b), which provides grant funds to school districts that adopt a more extensive teacher evaluation system that incorporates student test scores in the evaluation of a teacher. Other accountability measures that have come into practice include: pay-for-performance compensation models, value added statistical modeling to determine teacher effectiveness in increasing student test scores, the use of ranking systems in local school districts that rank teachers from the most effective to the least, an increase in the number of required evaluations teachers receive each year, and the use of digital video to evaluate teachers.

Evaluating this enhanced system of accountability through the lens of co-production allows the reader to examine how such increased accountability measures

impact the co-production of education services at the teacher-student nexus. As accountability measures intensify teachers' emotional experiences, it is prudent to examine the impact these measures have on teacher effectiveness in the classroom.

The Accountability Movement

In the U.S., individual states are largely responsible for delivering education services and developing systems for monitoring their effectiveness (U.S. Department of Education, 2012). Education funding is essentially the responsibility of each state, with the federal government contributing only 10.8% of the total education allotment annually (U.S. Department of Education, 2012). The role of the Federal government in education is largely one of oversight. Despite its limited role in the delivery of education services, there have been moments in history in which the Federal government has taken a more significant active role in education, specifically when there have been perceived threats to national safety, economic growth, and competitiveness. The consistent thread throughout these historical moments in U.S. history is these moments raised significant concerns regarding student achievement levels and therefore questioned the efficacy of American schools. This resulted in policy makers reacting with proposed reforms emphasizing accountability.

The post-Sputnik crisis. The accountability movement in public education was in its embryonic form in the U.S. during the late 1800s with the advent of the local school board, which resulted in public officials being held accountable for the delivery of local education services (Cuban as cited in Gunzenhauser & Hyde, 2007). However the first momentous educational reforms that occurred on a national level coincided with the

United State's response to *Sputnik*, the first artificial Earth satellite successfully launched by Russia in 1957. The satellite's successful launch incited the "American Sputnik Crisis" in which the U.S. worried Russia now possessed the means for launching a nuclear warhead onto American soil (Launius, n.d.). In addition, Americans were shocked by Russia's success and were left bewildered by the U.S. being outdone by Russia on such a significant level (Launius, n.d.). The U.S. education system was faulted due to inferior schools than those of Russia (Steeves, Bernhardt, Burns, & Lombard, 2009). Within a year of Sputnik's successful launch, the U.S. Congress passed the National Defense Education Act and dedicated $153 million into the U.S. education system (Steeves et al., 2009). Accountability from the schools focused on curricula, specifically, what was being taught and how, and the focus in schools and universities was science technology, engineering, and math.

The Elementary and Secondary Education Act of 1965. The creation of the *Elementary and Secondary Education Act of 1965* was the next crystalizing moment of the accountability movement in U.S. education, by focusing federal efforts to facilitate accountability in the public schools on a national level. As part of President Lyndon B. Johnson's "War on Poverty," the Elementary and Secondary Education Act was designed to allocate special funding for educating the poor, who were viewed as "educationally deprived children" (McNally, 2013).

Title I of the act required annual evaluation of how federal education funds were expended. This amendment signaled a historical shift in how the federal government monitored its allocation of resources, "This became part of a movement for greater

attention to assessment of the effects of federal legislation, and accountability shifted to a focus on the efficient and equitable use of resources and to an emphasis on outcomes and performance" (Gunzenhauser & Hyde, 2007, p. 497).

A nation at risk. In 1983 a report from the National Commission of Educational Excellence, entitled: *A Nation At Risk, the Imperative for National Education Reform in America* marked yet another significant milestone in the new accountability movement (Schmidt, 2009). *A Nation at Risk* expressed serious concerns about the mediocrity of American education and its subsequent low academic rating in comparison to other nations around the world (Schmidt, 2009). The report advocated for intensive, comprehensive educational reforms including, "increased parental and communal involvement in local schools, higher trained and motivated teachers, and increased commitments from the federal, state, and local governments to foster key national educational goals" (Schmidt, 2009, p. 12). The report indicated that the analysis of 19 tests from 1963-1980 showed that American students did not score first or second in any of the tests when compared to other industrialized nations, and placed last in seven of the tests (Gardner, 1983). The report made thirty-eight recommendations along five strands: content, standards and expectations, time, teaching, leadership and fiscal support. Amongst these recommendations were increasing the length of the school day, adopting more "rigorous and measurable standards," and holding students to higher expectations for performance and conduct. The commission also recommended enhancing teacher quality, requiring higher standards for teacher-preparation programs, and making teacher salaries more competitive with other professions (Gardner, 1983).

1989 Education Summit. Six years after the publication of *A Nation at Risk,* student achievement scores had not improved significantly. Despite disagreement on what should be changed in educational reform to improve student achievement, consensus grew on the need to explore state and national standards. This was the impetus for the next historical moment in the new accountability movement, the first ever Education Summit in the U.S. in 1989. Then-President George H.W. Bush and the U.S. state governors agreed to a three-pronged, systematic approach to public school reform that included: high standards, accountability, and providing adequate resources. The goal of the summit was to create national performance goals in an effort to improve the U.S. student achievement, and subsequently competitiveness on an international level, "Concerns about the decline in American economic well-being in the mid-1970s and 1980s persuaded many analysts and policymakers to believe that the United States needed a much better educated labor force in order to remain competitive in the growing global marketplace," (Vinovskis, 1999, p. 38). The summit participants agreed to four goals: begin the process for creating national education goals; enhance accountability in the use of Federal funding to meet national goals; restructure the education system on a state by state basis; to report progress on these education reform goals annually.

The reauthorization of the Elementary and Secondary Education Act—The No Child Left Behind Act of 2001. In 2001, the U.S. government followed through on the creation of high standards for student achievement and emphasized the need for stronger accountability by American schools and teachers. The *No Child Left Behind Act* was the next significant milestone in the accountability movement. A significant premise of this

law addressed the educational needs of students who historically have been underserved in the American education system, including minority groups, special education students, economically disadvantaged students, and students whose first language is not English.

The No Child Left Behind Act of 2001 represented the reauthorization of the *Elementary and Secondary Education Act*, and was signed into law by then-President George W. Bush. This Act embodies the shifting role of the Federal government in the facilitation of education services from a more limited position to an expanded, active role of creating measurable education standards and monitoring states', districts', and schools' progress in meeting these standards. The Act requires all states to facilitate annual student assessments in reading, writing, and math. Schools were mandated to produce public report cards announcing their performance on annual standards-based assessments; schools were labeled according to their performance on these annual exams. Title I schools were required to show proof of making Adequate Yearly Progress (AYP) towards their education standards, as demonstrated by student test scores. Under the law, teachers are required to demonstrate proof of being highly qualified to teach in their subject area; teachers must possess a four-year college degree, be certified or licensed by the state in which they teach, and demonstrate content knowledge in the subject area they are teaching by passing a state test or having majored in the subject in college (Hamilton et al., 2007).

This new chapter in the accountability movement marked a momentous shift from the traditional accountability system in the U.S., in which school districts were required to demonstrate compliance with federal policy and regulations, to a new accountability

system in which districts were required to demonstrate specific levels of student achievement. Fuhrman (1999) delineated seven specific characteristics of this new accountability system for public schools: 1. Accountability was connected to student performance; 2. Schools became the unit of improvement; 3. Schools were required to implement strategies based on student achievement objectives; 4. Compliance monitoring shifted focus away from compliance with Federal policy to a focus on effective pedagogy; 5. Categories of accreditation increased based on outcome measures (i.e. graduation rates, test scores); 6. School-level test scores were publicly reported; and 7. More consequences were attached to school performance levels.

The law has been criticized for its focus on standardized testing, and its high stakes nature. Specifically, NCLB requires that schools receiving Federal funds, namely Title I schools, to "achieve adequate yearly progress" (AYP) goals for all of their students and for specific student subgroups including: the economically disadvantaged, students from specific ethnic/racial backgrounds, students with limited English speaking proficiency, and students with disabilities. If these schools do not meet their annual goals for two or more years, a series of increasingly punitive interventions are imposed with each successive year of failure. Repercussions for schools that are deemed failures include having to provide students with school transfer options (and provide transportation to such schools), providing supplemental academic services to students, and corrective actions which may include: replacing school staff; implementing new curricula; decreasing the authority of school administrators; soliciting professional

counsel from outside of the school; increasing the school day and/or calendar; and restructuring the school's organization (U.S. Department of Education, 2003).

If the school receiving federal funds fails to meets its AYP goals after five years, the school district must plan to restructure the school. Such restructuring would require the school to do one of the following: transform the school into a public charter school, replace teachers and staff members, replace the principal, facilitate the school's management using an outside agency, or allow the state to take over the school to take over operation of the school (U.S. Department of Education, 2003).

The high stakes nature of NCLB and student testing has also contributed to teachers "teaching to the test," and therefore teaching a narrow set of academic skills, rather than higher-level skills such as problem solving and higher-order thinking skills (Hursh, 2007). Lastly, because states develop their own standards and tests to measure student progress in achieving these standards, the NCLB Act has been accused of contributing to states' practice of lowering student achievement standards in an effort to achieve higher scores on the annual standards-based assessments (Hursh, 2007).

Race to the top. The U.S. Department of Education in 2009 initiated a financial incentive program for states entitled, *Race to the Top*. This grant program offered $3.4 billion to those states that could "demonstrate and sustain reform" in the following five areas: rigorous standards; teacher evaluation; data-driven decision making; addressing needs of failing schools; and, encouraging the growth of charter schools (U.S. Department of Education, 2009). Race to the Top signified the Federal government's desire to link student performance to teacher evaluation. The incentive grant program

offered states federal funds if they designed their teacher evaluation systems to include student achievement scores. President Obama stated that including student achievement scores as part of the teacher's evaluation was not intended for blaming teachers, but rather as a measure of accountability. Secretary of Education, Arne Duncan corroborated President Obama's rationale for accountability by emphasizing that student achievement scores allow those outside of education to see improvement and, if not, to provide the support teachers and administrators need for improvement.

The reauthorization of the Elementary and Secondary Education Act. The Elementary and Secondary Education Act was due for reauthorization in 2007, however this has not yet come to fruition due to congressional gridlock. Therefore in its absence, the Obama Administration proposed a "blueprint" for the law's reauthorization, which delineated four major goals (Obama, 2011)

> (1) Improving teacher and principal effectiveness to ensure that every classroom has a great teacher and every school has a great leader; (2) Providing information to families to help them evaluate and improve their children's schools, and to educators to help them improve their students' learning; (3) Implementing college- and career-ready standards and developing improved assessments aligned with those standards; and (4) Improving student learning and achievement in America's lowest-performing schools by providing intensive support and effective interventions. (Priorities section, para. 1)

President Obama's "blueprint" calls for enhanced accountability measures for public schools. This increased accountability model includes the requirement of states to

develop data systems to track the progress of how schools and districts are preparing students to graduate from high school prepared to enter college or a career (U.S. Department of Education, 2010a). Continuing with current Elementary and Secondary Education Act – No Child Left Behind policy, schools will be required to publicize student achievement and growth in academic areas. In addition, however, schools will also be required to make public graduation rates, college enrollment rates, and college enrollment rates without need for remediation. The public will also be apprised of data concerning school climate, disciplinary issues, and student, parent and school staff survey results regarding their educational experience.

State of Alaska – reform & accountability. The current Governor of Alaska, Governor Sean Parnell, would like the state to be a leader in the nation's accountability movement requiring increased emphasis on student achievement as part of teacher evaluation. Governor Parnell suggested that 50 percent of a teacher's evaluation should be based on student growth, "Nearly 20 states in the nation now weigh at least 33 percent, and many 50 percent, of the performance evaluation based on student academic progress. I would like Alaska to lead in this, not bring up the rear with 20 percent of an evaluation focused on student improvement" (Parnell, 2012, para. 3). Emphasizing the commitment to greater accountability from schools and districts, Parnell expressed concern that the Department of Education was recommending that only 20% of a teacher's evaluation be tied to student achievement.

Teacher Effectiveness

Absent from current educational policy is a cogent definition of teacher effectiveness, as well as a valid and reliable method for assessing it (McColskey et al., 2006; Sykes & Dibner, 2009). Value-added measures such as statistical growth models of student achievement aim to address this issue by quantifying the amount of achievement a student has gained under the instruction of a specific teacher. These value-added measures, however, are in their nascent stage and have not been as established as valid tools for measuring teacher's effectiveness (Amrein-Beardsley, 2008; Sykes & Dibner, 2009). Criticisms have focused on technical problems associated with value-added models, including: selection bias in student assignment to teachers (Rothstein, 2008, as cited in Sykes & Dibner, 2009); the postulation that standardized achievement tests can accurately assess student achievement growth using interval scales (Ballou, 2008, as cited in Sykes & Dibner, 2009); student mobility between schools during the academic year (Hanushek & Jorgenson, 1996, as cited in Sykes & Dibner, 2009); the impact of student factors on test scores including student background and demographics, class size, and the lack of capacity for such models to include other teachers' inputs that may or may not have contributed to student achievement levels (McCaffrey, Lockwood, Koretz, & Hamilton, 2003, as cited in Sykes & Dibner, 2009).

Further confounding the issue of defining, quantifying, and assessing teacher effectiveness is including in the formula those variables beyond the teacher's control but which impact student achievement. Teacher effectiveness is impacted by the context in which teachers teach. Working conditions such as class size, students' socioeconomic

status, and school demographics impact the delivery of education services (Jepsen & Rivkin, 2009). School factors that contribute positively or negatively to student achievement have been studied extensively and underscore that school factors directly impact student achievement (Jepsen & Rivkin, 2009; King & Roelke, 2009; Sykes & Dibner, 2009). Therefore as high stakes accountability measures in the U.S. seek to relate teacher evaluation, compensation, and retention to their "effectiveness" in the classroom, the fundamental issue remains of how to define and quantify teacher effectiveness in an accurate, valid manner.

Measuring Teaching Effectiveness

For the purpose of this study, teacher effectiveness was gauged using information and assessment data from The Organization for Economic Co-operation and Development (OECD). OECD is an international organization that facilitates research in an effort to "help governments foster prosperity and fight poverty through economic growth and financial stability" in an effort to contribute positively to the economic and social well being of people through the world (OECD, n.d.). The quality of a country's education system is a momentous factor in facilitating economic growth and stability; therefore OECD has focused considerable attention and resources into examining the profession of teaching and how teacher effectiveness can be enhanced. As policy makers often use comparative data to assess the effectiveness of the U.S.'s education system, choosing an evaluative tool that allows comparison to other countries was a significant factor in the selection of OECD's assessment tool for measuring teacher effectiveness.

Teaching and Learning International Survey (TALIS). In an effort to analyze teaching practices throughout the international community, OECD (2010) developed the Teaching and Learning International Survey (TALIS), which allowed countries to evaluate the teaching profession in their own nations, as well as compare their teaching to that found in other countries. In turn, countries can then analyze their current policies and practices and develop policy that facilitates more effective conditions for teaching and learning (Davidson, Jensen, Klieme, Vieluf, & Baker, 2009,).

The TALIS examined major education policy issues as they relate to the teaching profession, including: professional development; teaching practices, teacher beliefs and attitudes; teacher appraisal and feedback; and school leadership (OECD, 2010). Data from the TALIS was collected and analyzed along several factors including teacher characteristics, school characteristics, and system-level factors that are significant to teachers and teaching.

The results of the 2007 TALIS suggested four strategies for impacting teacher effectiveness:

1. Adoption of constructivist beliefs. Constructivism is a learning theory in which students, “create their own new understandings on the basis of an interaction between what they already know and believe, and ideas and knowledge with which they come into contact” (Richardson, 2003, p. 1623). This constructionist view allows for the facilitation of more student-oriented practices and enhanced learning activities. Powell and Kalina (2009) confer that constuctivism is an optimal teaching method because of its focus on student-centered learning in which personal meaning is derived from the subject matter,

thus fostering more individualized and effective student learning. A smaller study by Calik, Ayas, and Coll (2010) examined the effectiveness of applying constructivist strategies to teaching chemistry and found this methodology to be an effective method for students to learn concepts related to chemistry. In contrast, Matthews (2003) referenced the results of a multi-year experiment aimed at evaluating the effectiveness of different teacher approaches for work with at risk children. Project Follow Through systematically evaluated nine different models of education delivery, and the constructivist teaching approach was found the least effective (Matthews, 2003).

2. Incorporation of a wider range of instructional strategies and techniques.

Effective teachers use an array of different practices; in addition they implement a broad curriculum. This diversity facilitates greater student participation and encourages students to take more responsibility for their own learning (Davidson et al., 2009). Research by Baumgartner, Lipowtski, and Rush (2003) demonstrated that differentiation of instructional strategies with low-level readers was found to raise students' reading achievement, reading skills (decoding and phonemic awareness), and reading comprehension. In a comprehensive review of the literature on differentiated instruction, Tomlinson et al. (2003) underscore that most teachers do not apply a wide range of instructional strategies and practices, despite the research underscoring effectiveness in raising student achievement. Reasons provided by teachers for not differentiating instruction for different learner needs included: fear of calling attention to learners with special needs, feeling it was not their job to differentiate for every student's needs, they were not cognizant of different learners' unique needs, they felt such accommodations

enabled students instead of fortified them for the real world, and they didn't know how to modify curriculum or facilitate student accommodations (Tomlinson et al., 2003). A study by Gayfer (1991), indicated that students in differentiated classrooms have greater achievement gains than students in non-differentiated classrooms (as cited in Tomlinson et al., 2003).

3. Collaboration with peers. Effective teachers collaborate with other teachers and in doing so garner ideas and information from their colleagues that improve their teaching. Teachers who collaborate with other teachers report "more positive teacher-student relations at their school" (Davidson et al., 2009, p. 122). Such collaboration also contributes positively to the school climate and teacher's job satisfaction. In their review of the research on teacher collaboration and the use of Professional Learning Communities, Vescio, Ross, and Adams (2008) found that teacher collaboration had a positive impact both on teaching practice and student achievement. Collaboration with peers allowed teachers to discuss their classroom practices and develop and discuss new ideas with their peers and provide feedback to one another as professionals as to effective teaching strategies for increasing student achievement. Survey research conducted by Goddard, Goddard, and Tschannen-Moran (2007) corroborates the research of Vescio et al. (2008), and found empirical support for the effectiveness of teacher collaboration as it pertains to curriculum, instruction, and professional development at the elementary school level. Goddard et al. (2007) found that in schools where teachers collaborated in an effort to improve student achievement, positive differences in both math and reading were established.

4. Utilize classroom management techniques that minimize disruptions and administrative tasks during learning time. A teacher who can demonstrate effective classroom management techniques maximizes learning time in the classroom, and also fosters a positive learning environment for students and a positive work environment for teachers—both of which lead to greater student achievement. Gettinger and Seibert (2008) posit that maximizing academic learning time is one of the most important correlates of student achievement. However, despite this significant relationship between maximizing learning time through effective classroom management, research by Hollowood, Salisbury, Rainforth, and Palombaro (1995) indicates that student engagement resulting from classroom management can ranges between 50% and 90%. Hollowood et al. (1995) attribute significant differences in student engagement levels to teachers' differential use of classroom management techniques and student grouping, as well as engagement differences based on individual student differences. Klem and Connell (2004) research corroborates this research and asserts that student engagement is a strong predictor of student achievement and behavior in school.

In addition to these overarching recommendations, the results of the TALIS distinguished two specific categories of pedagogical strategies that were significantly related to teacher effectiveness: the implementation of enhanced student activities (students complete in-depth projects, debate a particular point of view, create a product demonstrating their learning), and operating from a student-centered orientation (assignments and school work are differentiated by ability, students are encouraged to suggest learning activities and topics, and students work collaboratively in small groups)

(Davidson et al., 2009).

Student enhanced activities and project-based learning are effective in raising student achievement because they engage and motivate students (Blumenfeld et al., 1991; Savoie & Hughes, 1994). Students feel challenged by more cognitively complex tasks, and they enjoy the learning opportunity to solve real problems (Savoie & Hughes, 1994). Research on the effectiveness of project-based learning on student achievement has yielded convincing results regarding its positive impact on student learning--schools within the same district that used project-based learning activities and strategies scored better on reading achievement tests by 9% than those schools not using this strategy; math achievement scores were approximately 4% higher (Expeditionary Learning Schools, 2009).

A student-centered approach to teaching places the student at the center of learning, and strives to involve students actively in their own learning by making learning relevant to their own lives. In contrast to the conventional teaching approach of lecturing to students and encouraging memorization of facts and information, the student-centered approach places teachers in the role of guides or advisors, encouraging students to take an active role in their learning by providing students with options to create their own learning opportunities. The student-centered approach personalizes learning for students. Teachers facilitate and guide student learning that is individualized and designed with the students' learning preferences and specific areas of interest in mind. Because students are encouraged to pursue, develop and investigate their ideas, student-centered approaches help students learn independently (Machemer & Crawford, 2007). In addition, properly

implemented student-centered instruction contributes to enhanced student motivation, greater retention of information, more in-depth understanding of the subject matter, and a more positive attitude about the subject matter (Felder & Brent, 1996). Research by Stipek, Feiler, Daniels, & Milburn (1995) indicated that children in student-centered classrooms also develop better outlooks towards school and learning, and possess healthier self-concepts.

Co-production

Theoretical concept of co-production. E. Ostrom (1996) defines co-production as: "the process through which inputs from individuals who are not 'in' the same organization are transformed into goods and services. …Co-production implies that citizens can play an active role in producing public goods and services of consequence to them" (p. 85). Rather than the traditional model of the production of goods and services in which goods and services are produced or facilitated and then made available to the client for purchase or use, the theory of co-production posits that the client is an active agent in the process and therefore the level and quality of the client's involvement impacts the co-production of the goods or services. Numerous public services are coproduced, meaning that the input from the customer (e.g., client or student) is necessary to the process, and through participation in the process enhances the good or service. V. Ostrom (1989) provided the following examples of public services that are coproduced:

> Users of many public services are themselves essential co-producers. Teachers cannot produce education without the co-productive efforts of students; police

> cannot produce public order without the co-productive efforts of citizens. Public servants help to accomplish these tasks. They rarely produce the results themselves. Units of government of varying size are necessary to take account of the diverse situations and patterns of community preferences that may exist in different and overlapping communities that make joint use of various public goods and services. (V. Ostrom, 1989, as cited in Porter, 2011, p. 8)

The term co-production was generated from Ostrom and colleagues at the *Workshop in Political Theory and Policy* (1995)*;* however, the concept of co-production, as differentiated from the traditional model of production, has a rich history, beginning with formal studies of the concept being published in the U.S. in the 1960's as a growing number of Americans questioned the increasing presence of the government in their lives, as well as the efficacy of large, government bureaucracies (Porter, 2011).

In co-production service agents participate in co-production as "regular producers in the service process;" whereas community members participate in this co-production as "consumer producers;" their participation in the process is voluntary with the intention of "enhancing the quality and/or quantity of services they receive" (Brudney & England, 1983, p. 59). The co-production model, the intermixing of service agents and citizen contributions, is juxtaposed to the traditional service model, as seen in Figures 2 & 3 on the following page.

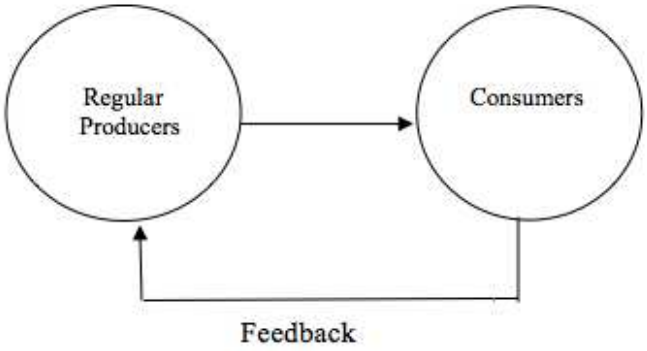

Figure 1: Traditional Model of Service Delivery

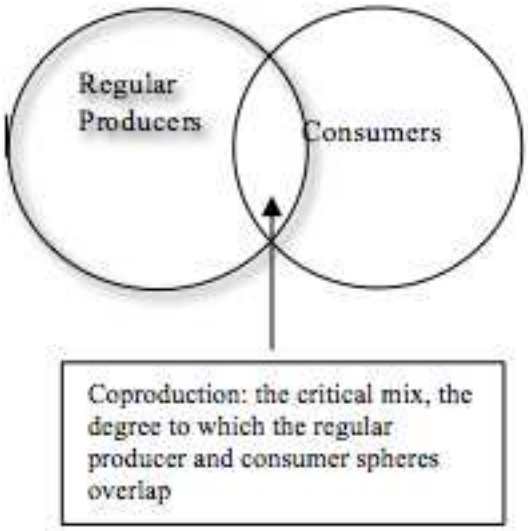

Figure 2: Co-production Model of Service Delivery

As discussed by Whitaker (1980), the term co-production does not denote that the agent and the client are on equal footing; on the contrary, in the co-production process there is a clear differentiation between the two co-producers. The co-producer who delivers services in this process is the agent and this person uses his or her training and expertise to facilitate the production process (Whitaker, 1980, p. 240). Agents possess specialized knowledge, experience, and/or training to "prescribe" certain actions of the

individual, i.e. service recipient. Whitaker describes the agent as possessing "professional authority" and may engage in "mutual adjustment of expectations and actions" in which the agent and the individual both adjust their actions based on their mutual consideration of the issue. This facilitator is the one within the co-production process who "helps the person being served to make the desired sorts of changes" (Whitaker, 1980, p. 240). The co-production process underscores the interdependence of the two agents by asserting that co-production is not possible without one of the agents, "… the agent alone cannot bring about the change" (Whitaker, 1980, p. 240).

Porter and the co-production of education services. Porter (2011) delineates three components that are central to the co-production of education services:

1. Co-production is not optional when it comes to education services.
2. There is an inherent asymmetry in co-productive contributions by student and teacher.
3. Significant inputs are provided from outside the classroom by parents, peers, community organizations and others. (Porter, 2011, p. 9)

The first component, co-production is not optional when it comes to education services, requires cooperative inputs from both the teacher and the student; cooperation is compulsory, as learning cannot be facilitated without it (Porter, 2011). Because the co-production of education services requires the mutual cooperation between the teacher and student, less than maximum participation by either party hampers the co-production process. Conversely, co-production is maximized when input from both parties is maximized. Therefore, if in the achievement setting, the teacher is effectively sharing

knowledge with a student (appropriate level of instruction, materials, and setting), however the student is not actively engaged in the process (i.e. disinterested, tired, preoccupied), the co-production of education services cannot be realized. Similarly, if the student is engaged in the process but the teacher is not fully engaged (i.e. disorganized, unmotivated, tired), again the co-production process cannot be maximized. Specific examples and support from the literature is provided in the forthcoming section titled, "Factors impacting the co-production of education services."

The second component states there is an inherent asymmetry in co-productive contributions by student and teacher. Reiterating the sentiments of Whitaker (1980), Porter (2011) clarifies the asymmetrical relationship existing between two co-producers of education services. Although the term co-production may connote a production process that is equally shared, this is clearly not the case, as the contributions from the teacher (regular producer) and the student (consumer producer) are asymmetrical and therefore lacking equality or equivalence between parts. In the asymmetrical co-production of education services, teachers' contributions are markedly different than those provided by the student.

The third and final central component is that significant inputs are provided from outside the classroom by parents, peers, community organizations and others. Porter (2011) delineates "two broad types of co-production" within the context of education, the first type of co-production occurring at the student/teacher nexus, and the second type of co-production being facilitated outside of this circle and beyond the immediate interaction between student and teacher. This second type of co-production involves

inputs from outside contributors; “Inputs from parents, student peers, community organizations and public media contribute to the co-production of education services. These contributions are contingent and vary in intensity and quality” (Porter, 2011, p. 151). The important distinction between these two forms is that co-production of education services cannot occur if there is not input from both the teacher and the student; whereas the second form of co-production; the contingent inputs from sources outside of the student/teacher nexus, are not required for co-production to occur. Critical analysis of the nature and impact of such inputs are discussed in further detail in the following section.

Co-production and contingent inputs from outside the student-teacher nexus. Although inputs from outside of the student-teacher nexus are not required for the co-production of education services, such inputs, or lack of inputs, have a profound impact on student achievement (Bailey & Dynarski, 2011; Heckman, 2011; OECD, 2010; Phillips, 2011; Reardon, 2011) and therefore compel further discussion. Fifty years ago, race was the most significant indicator of the achievement gaps between groups of students. As the achievement gap between white and African-American students has diminished considerably, the key factor to understanding achievement differences in children has become family income level (Reardon, 2011, p.1).

Reardon (2011) studied data from standardized test scores collected between 1960 and 2000 and found that the achievement gap between students from low-income families and affluent families has grown 40 percent and is now two times the size of the gap between blacks and whites. Reardon (2011) elaborated that parent education level

remains a key indicator of student achievement levels, however underscores a more recent phenomenon in the research, which is the strong, predictive quality of family income, “Family income is now nearly as strong as parental education in predicting children’s achievement” (p. 2).

Using longitudinal, nationally representative data on children’s allocation of time, Phillips (2011) compared disparities between groups based on socioeconomic status and ethnicity to explore how such time differences impact children’s academic achievement. Phillips’ findings underscore work from Reardon (2011) and Coleman et al. (1966) in concluding a strong correlation between families’ race and income and their children’s achievement in school. Phillips (2011) found that children from white, Asian American, and college-educated homes start school better prepared than their same-age peers who are African American, Latino, or from high-school educated homes. Phillips (2011) found that children of college-educated mothers were significantly more advanced in their readiness to enter school than those children of high school-educated mothers. School readiness included literacy, math, and behavioral skills appropriate for children entering kindergarten.

One reason family income levels are significantly related to their children’s achievement levels is because wealthier parents invest more money into their children’s education and extra curricular activities than parents from lower income families; this translates into a significant difference in children’s cognitive and social emotional development, (Reardon, p.13). These financial investments and exposure to stimulating activities outside the home start at an earlier age too. Research by Phillips (2011)

indicates that when children from high-income families start school, they have been exposed to significantly more literacy activities than children from low-income families, and therefore enter school with a much stronger advantage than poor children (p. 9).

Factors impacting the co-production of education services. Porter (2009) delineates three factors can impact the co-production of education services on either side of the teacher-student nexus, specifically motivation, ability, and effort. A diminished level of motivation, ability, or effort on either side of the teacher-student nexus will result in a less efficient process of co-production.

Motivation. Research pertaining to the teacher side of the co-production model indicates mixed results regarding the impact of teacher motivation level and student achievement. Hayden (2011) researched the relationship between teachers' motivation and its influence on student achievement using qualitative methodology (interviews and observations). Hayden evaluated how math teachers who taught at a failing school perceived their own level of motivation as impacting their students' learning. Data analysis revealed a significant negative correlation between the teacher's motivation level and the students' achievement scores. In contrast to Hayden's findings, Hatchett (2010) did not establish a significant relationship between teacher job satisfaction, and student achievement in her study of middle school teachers.

Studies pertinent to the impact of motivation on the student side of the co-production model are more consistent and support Porter's (2009) assertion that motivation is a significant factor in the coproduction of education services. A longitudinal study of 375 middle school students facilitated by Wentzel (1997)

determined that perceived caring from the teacher predicted motivational outcomes. Wentzel (1997) found that students put forth more effort in school when they believed their teacher cared about them. Cordova & Lepper (1996) found a significant relationship between student-centered teaching and students' intrinsic motivation and enhanced achievement. A group of elementary students who participated in student-centered learning activities demonstrated higher levels of intrinsic motivation and set higher achievement goals for themselves. In addition children in the student-centered activities also demonstrated higher levels of involvement in the learning activity and higher order thinking skills.

The work of Hayden (2011), Wentzel (1997) and Cordova & Lepper (1996) underscore the impact that motivation has on the co-production of education services, and the enhancement that results when motivation is boosted on either side of the teacher-student nexus. Hatchett's (2010) research however, did not indicate such a relationship.

***Ability*.** A teacher's ability to facilitate student achievement clearly impacts the coproduction of education services. In a review of state educational policy evidence, Darling-Hammond (1999) reviewed research studies pertinent to teacher effectiveness, and found that there are a number of indicators related to teacher ability that predict student achievement: teacher preparation training, teacher certification requirements, and teacher coursework in the subject field. Each of these three factors was found to be significantly correlated with student achievement, with the strongest indicators being teacher preparation and certification (Darling-Hammond, 1999). Teacher's intelligence (as measured by IQ) and subject matter knowledge were not reliable indicators of

teaching ability. Therefore, teacher's ability can be evaluated in terms of overall knowledge and knowledge of teaching and learning, the latter indicating significant correlations with student achievement.

Evertson, Hawley, and Zlotnik (1985) (as cited in Darling-Hammond, 1999) reported a reliable, positive effect of teachers' formal education training and student learning. Monk (1994) found that teacher education coursework had a positive impact on students' math and science achievement. Womack (1993, as cited in Darling-Hammond, 1999) found that the number of education courses that teachers completed explained more than four times the variance in teacher performance (16.5 percent) than did measures of content knowledge. Research presented by Darling-Hammond (1999) also indicated that student achievement is higher and students are less likely to quit school when they are taught by a teacher who is certified in their teaching subject, or by a teacher who is taking graduate coursework or has completed a Master's degree (Council for School Performance, 1997; Knoblock, 1986; Sanders, Skonie-Hardin, & Phelps, 1994, as cited in Darling-Hammond, 1999). From the research presented, it is clear that a teacher's ability to facilitate classroom learning impacts student achievement and that certain factors are better indicators of a teacher's ability than others. Also evident in this discussion is that teacher ability does impact student achievement, further validating the interdependent relationship between the teacher and student in the co-production of education services.

Students who are functioning below grade level have academic needs requiring specialized instruction from the classroom teacher. Such learners may include, for

example, those students from low socio-economic status groups, students with a learning disability, or English Language Learners. As classrooms in the U.S. become more and more diverse, teachers can expect that the spectrum of student achievement levels will become more diverse as well. The co-production of education services between a teacher and a low-ability or underperforming student will necessarily be different than it would be with an average or advanced student. Low achieving students require additional inputs and expertise from the classroom teacher, which may or may not be available. Teachers who do not have the training or expertise to deal with the inclusion of low achieving students will be less efficacious, which will negatively impact co-production. In addition the co-production of education services with other students in the classroom will necessarily be impacted as more time and effort will be allocated to the address low-ability or special needs students. Therefore the co-production of education services between the teacher and each individual child in the classroom will be impacted. Classroom teachers may experience an imbalance of work due to the inclusion of students with below grade level achievement levels, and subsequently be more vulnerable to stress.

Therefore Porter's (2009) assertion that participants' abilities impact the coproduction of education services is substantiated from both sides of the teacher-student nexus. Teachers who lack the ability or skills to teach a certain subject negatively impact the co-production of education services. Similarly, students whose abilities are significantly below their same-age peers and require specialized intervention(s) also contribute to a less efficacious system of co-producing education services in the

classroom.

Effort. The literature addressing teacher effort is closely tied to incentive-based policies in education that are designed to motivate and reward teachers who expend extra effort to raise student achievement. In Muralidharan and Sundararaman's (2009) study the authors present the results of a randomized evaluation of a teacher incentive program in Indian elementary schools. Muralidharan and Sunararaman evaluated the effectiveness of two types of performance pay incentives (group bonuses based on school performance and individual bonuses based on teacher performance) on raising student achievement. Significantly higher math and reading scores were achieved by those teachers and schools working under the incentive programs, and these programs were both deemed highly effective by the study's authors.

The results of this study indicate that teachers are cognizant of their ability to effectively improve student achievement, however the incentive program motivated the teachers to increase their efforts in the classroom (Muralidharan & Sunararaman, 2009). This behavioral change in efforts was measured by direct observation and through interviews. Data from the teacher interviews and observations indicated that teachers in incentive schools were significantly more likely to have exerted extra efforts with their students including assigning additional classwork and homework, extending teacher instruction beyond the typical school day, providing students with practice tests, and allocating more attention to those students with lower achievement records. Therefore in this study, a significant relationship between teacher effort and student achievement was established. A second research study by Imberman and Lovenheim (2012) corroborated

the findings of Muralidharan and Sunararaman's (2009) by establishing that student achievement improves significantly when teachers receive incentives for improved student performance. Teachers working under the incentive program reacted to the possibility of earning such incentives by increasing their efforts with their students through increased academic time and activities with students.

In a study of student and teacher perceptions of learning-disabled students, researchers found that student effort and organization were positively correlated with academic success, regardless of student disability status (Metzer, Katzir-Cohen, Miller, & Roditi, 2001). Carbanaro (2005) found a robust relationship between student effort and student learning, and found that students in higher-level coursework exerted substantially more effort than students in lower-level classes. Carbanaro explained these significant differences between higher and lower-achieving students to prior effort and achievement, suggesting that student effort or lack of effort can become a habit.

In addition to these studies connecting student effort to academic performance, the literature details a strong association between teachers' negative emotions (stress, frustration, anger) and perceived lack of effort from students (Georgiou, Christou, Stavrinides, & Panaoura 2002; Frenzel et al., 2009; Geving, 2007). Student effort, therefore, is a significant contributor to the co-production of education services. Student effort impacts co-production directly with concerted student efforts increasing student learning and diminished student effort negatively contributing to student achievement. In addition, student effort impacts teacher's emotions, specifically, inciting negative emotions that may, in turn, negatively contribute to teacher effectiveness in the classroom.

In conclusion, student and teacher inputs impact the quality of the co-production of education services. As discussed in this section, inputs as they relate to motivation, ability, and effort can contribute either positively or negatively to this process.

Co-production and reciprocal interdependency. Using Thompson's theoretical framework, Porter (2009) frames the co-production of education as an "intensive technology," in which the relationship between the teacher and student is reciprocally interdependent (Porter, 2011, p. 2). This interdependence produces enhanced learning when the teacher and student are maximizing their inputs (motivation, ability, and efforts), and conversely, diminished learning when such inputs are not being maximized. As discussed in the previous section, contributions from both sides of the coproduction model impact student learning and achievement, making them an interdependent unit.

The work of Hayden (2011), Wentzel (1997) and Cordova and Lepper (1996) illustrate the reciprocal interdependence between the teacher and student as it applies to motivation, specifically, that differences in motivation on either side of the teacher-student nexus will impact student learning. Research from Evertson et al. (1985), Monk (1994), Ferguson & Womack (1993), Council for School Performance (1997); Knoblock (1986), Sanders et al. (1994) discuss the reciprocal interdependence between teacher and student as it applies to ability and underscore how ability deficits on either side of the student-teacher nexus will impact student learning.

Lastly, the work of Imberman and Lovenheim (2012), Muralidharan and Sunararaman's (2009), Metzer et al. (2001), and Carbonaro (2005), underscore the reciprocal interdependence between the teacher and student as it applies to effort by

elaborating on how lessened effort on the part of the teacher or the student negatively impacts student learning and achievement. In addition, the work of Georgiou et al. (2002), Geving (2007), and Frenzel (2009) demonstrate how perceived lack of effort on the part of the student incites negative emotions in the teacher, further exacerbating the effective co-production of education services, as teacher effectiveness in negatively impacted by such emotions.

Muller's (2001) research on at-risk students also accentuates the reciprocal interdependence between student and teacher and its impact on the coproduction of education services. Muller's work illustrated how both the teacher and the student perceived the other's level of investment into the student-teacher relationship predicted gains in math achievement. Specifically, teachers' perceptions of the amount of effort students allocated towards schoolwork were associated, although weakly, with achievement in math. From the student side of the teacher-student nexus, students' perceptions of their teachers' level of care for them also were found to (weakly) predict student achievement in math. An equally significant finding as it relates to the reciprocal interdependence between the teacher and student, is the protective factor that such interdependence fosters for at-risk students. According to Muller (2001), at-risk students' perception of a caring relationship with the teacher predicts significant student achievement gains in math, as opposed to the weaker predictive value with students who are not considered at-risk. From these findings, one may deduce perhaps that the reciprocal interdependence between teacher and student is even stronger for at-risk students. This is an area worthy of future research.

Co-production and educational reforms. Porter (2011) suggests that an institution is more effective when "its structure takes into account the specific interdependencies inherent to its core technology" (p. 12). Applying this philosophy to education policy in the U.S., it seems prudent that policy makers evaluate the interdependency that exists at the student-teacher nexus, and use such information as a basis for making informed decisions for improving student achievement. Clearly the interdependent relationship between teacher and student in the facilitation of learning solicits further investigation into how to maximize reform efforts by looking at both sides of the co-production model. Effective educational reforms should also investigate strategies to address the inequalities between students entering school behind their same-age peers due to disparities in contingent inputs outside the teacher-student nexus.

Lastly, Porter (2011) describes the use of student test scores to assess success or failure in the co-production of education services as irrational because of its inability to assess with any amount of accuracy, which of the three contributing parties (teacher, student, family), or some combination of the three parties, has contributed (or not contributed) to the end product of the co-production process, that being the student's achievement scores. By focusing solely on the role of the teacher in student achievement, this one-sided reform model could lead to costly reform efforts that have little to no impact on the education system in the U.S.

Co-production and educational reforms--U.S. Department of Education. In 2011 President Barack Obama broached the concept of co-production in a letter introducing his blueprint for the reauthorization of the Elementary Secondary Education

Act. President Obama (2011) stated that improving education was a shared responsibility rather than the sole responsibility of teachers; communities and families must help schools meet the diverse learning needs of children by active involvement and participation at the school. President Obama (2011) acknowledged the need for community and family involvement to address effectively the achievement gap between lower and higher socio-economic groups in the U.S. Emphasizing that this goal should be a shared goal with families and communities, President Obama advocated for community members to become actively involved in improving student achievement and to work towards the goal of schools becoming the center of their communities. In addition, President Obama's letter described his administration's proposal to provide "support strategies to better engage families and community members in their children's education" (Obama, 2011, p. 6).

In addition to promoting strategies for involving families and community in the education of children, the Administration's blueprint advocates for "fair accountability for all levels" (Obama, 2011, p. 6). A shared responsibility for student learning beyond the school, and at the district and state level, is also offered in the Administration's blueprint, "To ensure that responsibility for improving student outcomes no longer falls solely at the door of schools, we will also promote accountability for states and districts that are not providing their schools, principals, and teachers with the support they need to succeed" (Obama, 2011, p. 6).

Obama's (2011) blueprint for education reforms offers insights into the Administration's perception of responsibility for student achievement. Although

proposed reforms continue to include student achievement in the evaluation of teacher effectiveness, and attribute responsibility for student achievement to educators, there is acknowledgement of the need for shared responsibility in the co-production of education services.

Teachers' opinions on the concept of co-production. To fully understand the impact of educational reforms it is essential to hear from teachers. Because classroom teachers are largely responsible for implementing federal and state mandates, their experience with such mandates provides important information regarding their implementation and perceived effectiveness. Three studies were selected for this purpose; *Standards-based accountability under No Child Left Behind: Experiences of teachers and administrators in three states* (Hamilton et al., 2007), *Stand by me: What teachers really think about unions, merit pay and other professional matters* (Farkas, Johnson, & Duffett, 2003), and *The MetLife survey of the American teacher: Collaborating for success* (Markow, 2010). The first study, *Standards-based accountability under No Child Left Behind: Experiences of teachers and administrators in three states* was sponsored by the National Science Foundation and underwent rigorous peer review. The second study, *Stand by me: What teachers really think about unions, merit pay and other professional matters,* was sponsored by Public Agenda, an organization which aspires to inform policy makers of the public's point of view, and to help average citizens understand important policy issues. *Stand by Me* was funded by the Broad Foundation, The Thomas B. Fordham Foundation, The William and Flora Hewlett Foundation, and the Sidney J. Weinber, Jr. Foundation. The third study, *The MetLife survey of the American teacher:*

Collaborating for success was facilitated by Harris Interactive, a market research firm retained by MetLife Insurance to facilitate the study. Because only one of these studies was peer reviewed, the information provided from these studies should be interpreted cautiously. Criticism is warranted for their inclusion; however, these three studies were intentionally selected because they provided qualitative data regarding teachers' response to reforms. It is this researcher's belief that such information provides important context for understanding reforms, and their inclusion provides a place for their voices to be heard in the discussion of reforms. Of particular interest for this study was teacher data that pertained to the theory of co-production.

In the teacher survey facilitated by *MetLife* (Markow, 2010), a nationally representative sample (n=1,003) of public school teachers, grades K-12. The data garnered from this study provided data pertinent to the theory of co-production. To begin, this data reveals that only half (52%) of teachers surveyed believe that they should be held solely responsible for student achievement (Markow, 2010, p. 14). Teachers also validated the significance of student input in the co-production model by recognizing that if the student provided more input co-production would be enhanced. Eighty percent (80%) of teachers stated that if students felt responsible and accountable for their own learning, there would be a significant improvement in student achievement. However, only 42% of teachers believe that most or all of their pupils have this sense of responsibility. In addition, teachers in the study recognized the impact of contingency factors outside the teacher-student nexus. Specifically, a strong majority of teachers (88%) agreed that strengthening ties between home and the classroom would enhance the

co-production of education services.

In the second study of teachers, *Stand by Me: What Teachers Really Think about Unions, Merit Pay and Other Professional Matters,* data pertinent to the theory of co-production was also garnered. Similar to the results described in *The MetLife Survey of the American Teacher: Collaborating for Student Success,* Farkas et al. (2003) shared findings in terms of how teachers perceived their level of responsibility in facilitating student achievement. Fifty-nine percent (59%) of the 1345 surveyed teachers agreed or strongly agreed with the statement, "It's not fair to hold teachers accountable when so many things that affect student learning are beyond their control" (Farkas et al., 2003, p. 56) Teachers in the study cited a number of variables in the classroom that contribute to the teacher's failure to facilitate 100% student achievement, including:

> One or two students who make it a daily struggle to maintain order. Or the extra time and attention they invest dealing with special needs kids or youngsters whose English is less than optimal. What about the youngster who arrive midyear or whose attendance is poor? What about the Herculean efforts they must make to reach students who are alienated or habitually disorganized or who are simply unwilling to learn? It's just not possible … to single-handedly overcome all of the hurdles that invariably seep into their classroom" (Farkas et al., 2003, p.15).

Eight in ten teachers surveyed in the 2003 Public Agenda study stated that they did not have the parental support needed to be effective (Farkas et al., 2003, p. 12). Teachers expressed their dismay with being held completely accountable for student achievement; one teacher commented:

> You are given this raw material to work with and in many cases we'll have students who will come into high school with an inability to read—[they] can't add or subtract—and we're supposed to perform miracles and bring them up to speed and make high performers out of them. If we don't, then we're held accountable. (Farkas et al., 2003, p. 12)

Another teacher reiterated similar sentiments: "I cannot make these kids show up. I can't go to their house, get them out of bed and help them when they have dirty laundry. I can only do so much" (Farkas et al., 2003, p. 13). Another teacher expressed the perceived unfairness of placing all accountability for student achievement onto the classroom teacher,

> We're the only ones that are being asked to be [held] accountable, but our product doesn't have to be accountable. You can hold me accountable as a salesperson…Well you better give me a good product to do that. {Teachers} have no way to hold our product accountable" (Farkas et al., 2003, p. 13).

Teachers in the study emphasized the fundamental necessity for parents to be actively involved in their child's education. The study's authors stated that teachers "need parents who place a premium on school and learning, and who hold children accountable for their effort and behavior" (Farkas et al., 2003, p. 15). Teacher interviews for this study revealed that 65% of teachers believed that an exceptional teacher could overcome "societal barriers such as poverty or uninvolved parents and still get their students to learn what they are supposed to" (Farkas et al., 2003, p. 16). However the majority of respondents (73%) stated that even a group of exceptional teachers could not turn around

a school that had both low achieving students and uninvolved parents.

Results from The Rand Corporations's study, *Standards-based accountability under No Child Left Behind: Experiences of teachers and administrators in three states,* underscored similar teacher sentiments of frustration regarding issues outside of their control that hampered their efforts, including students' lack of basic skills, inadequate support from parents, and student absenteeism and tardiness (Hamilton et al., 2007). Other factors that teachers described as having a negative effect on student achievement were factors such as poverty, substance abuse in the home, lack of parent involvement in their child's education, and somatic issues. Teachers expressed that it was unrealistic to hold students to high levels of achievement when faced with these types of obstacles. Teachers also expressed frustration in what they perceived as insufficient teaching and planning time. Many teachers expressed low morale, which the study's researchers attributed to a disconnect between teachers' own beliefs regarding teaching and effective pedagogy, and the approach to teaching being adopted in their schools and teachers' own beliefs (Hamilton et al., 2007).

A common theme in each of these studies was frustration with factors outside of the teacher's control that had significant impact on student learning in the classroom. Of particular concern to teachers was the lack of parent involvement in their students' schooling. This led to a third common thread between the three surveys, which was the angst teachers experienced in being held completely responsible for student achievement, despite these other barriers.

Achievement Emotions

Achievement emotions are emotions that are connected to achievement activities or achievement results (Pekrun, 2006). For a teacher, these emotions may include excitement with a class that is demonstrating interest in a topic, disappointment when students perform poorly on an exam, anger when a class does not complete assignments, or anxiety when being observed by a colleague or principal.

Emotions in the classroom affect learning and teaching. Emotions impact a student's attention, motivation, and coping strategies for studying and learning, whereas a teacher's emotions impact his or her attitude towards the class, the level of motivation in working with the class, and the selected teaching strategies (Pekrun, 2006). Pekrun (2006) found the key to understanding emotions in the classroom is acknowledging that these emotions are not only experienced, but also they are influential in achievement pursuits. Therefore, "emotions are recognized as being of critical importance for the productivity of both students and teachers" (Pekrun, 2006, p. 3). This is a critical link between the control-value theory of achievement emotions and the theory of co-production. Teachers and students alike, experience emotions in the classroom. At the student-teacher nexus these emotions are interconnected and dynamic.

The functions of emotions in the academic setting are significant for understanding how emotions impact the co-production of education services. As discussed by Pekrun & Stephens (2010), emotions impact numerous cognitive functions that directly impact learning: attention, memory, and problem solving. More specifically, positive and negative emotions expend important cognitive resources intended for

learning by redirecting such resources for non-academic purposes. Emotions in this regard act as distractions from the learning process. Pekrun, Goetz, Titz, & Perry (2002) references Ellis and Ashbrook's (1988) study on the Resource Allocation Model to illustrate the connection between emotion and cognitive functioning. Ellis and Ashbrook's research demonstrated the negative effects that depression has on cognition, including simple memory tasks. Pekrun et al. (2002) also cites the research of Zeidner (1998) to illustrate the relationship between emotion and cognition. Zeidner (1998, as cited in Pekrun et al., 2002) demonstrated that test anxiety negatively impacted university students' cognitive functioning, specifically concentration and comprehension.

Emotions can also impact memory. The emotion being experienced by an individual impacts what is noticed and how it is encoded (Richards & Gross, 2000). The concepts of mood congruence and mood dependence are pertinent to this discussion. Mood congruence denotes that an individual will remember events that match their mood; mood dependence indicates that recalling a memory is more easily facilitated when the mood experienced when the memory was encoded matches the mood when retrieving the memory (Richards & Gross, 2000). Pekrun & Stephens (2010) relates the consequence of this mood-congruent memory recall process to learning as such, "positive mood can foster positive self-appraisals and thus benefit motivation to learn and perform; in contrast, negative mood can foster negative self-appraisals and thus hamper motivation and performance" (Pekrun & Stephens, 2010, p. 11). Mood also impacts an individual's ability to problem solve, with a negative mood contributing to more "focused, detail-oriented, and analytical ways of thinking," and a positive mood contributing to more

malleable and creative ways of imaginative problem solving (Pekrun & Stephens, 2010, p. 11).

Pekrun's control-value theory of achievement emotions. Pekrun's (2006) control-value theory of achievement emotions postulates that achievement emotions are stimulated in an achievement setting when, "the individual feels in control of, or out of control of, activities and outcomes that are subjectively important to them, implying that appraisals of control and value are the proximal determinants of these emotions" (p. 22).

Pekrun (2006) posits that the achievement emotions experienced by a teacher are predicted by the two factors, perceived control over student achievement, and the personal significance and relevance attributed to the achievement activity by the teacher.

According to Pekrun (2006), the teacher who perceives having a high level of control over student achievement in the classroom, and whose values are congruent with the values of the achievement setting will experience "anticipatory joy," as he or she will predict success with student achievement (p. 320). The teacher who only perceives having "medium" control over student achievement but whose values are congruent with the achievement setting will experience hope towards successfully facilitating student achievement. However, the teacher whose values are congruent with the achievement setting but has subjectively appraised a low level of control over student achievement will experience hopelessness in being successful with facilitating student achievement.

Conversely, the teacher whose values are incongruent with the achievement setting but perceives a high degree of control over student achievement will experience "anticipatory relief" as he or she gauges the likelihood of success in facilitating student

achievement (Pekrun, 2006). The teacher whose values are incongruent with the achievement setting, but perceives having medium control over achievement will experience anxiety as he or she anticipates the outcome of student achievement. Lastly, the teacher whose values are incongruent with those of the achievement setting and perceives low control over the intensive technology interplay will experience hopelessness due to a negative appraisal of success in facilitating student achievement.

A teachers' level of control over student achievement is a variable that is subjectively appraised at the beginning of each new term and with each new class of students. As discussed in previous sections of this study, students enter the classroom with varying skill, motivation, and discipline levels. These environmental factors will contribute to the teacher's subjective appraisal of the potential for success or failure in attaining achievement goals with that particular group of students. Therefore assessing the level of control a teacher perceives having over learning is an important piece to understanding teachers' emotions and its subsequent impact on teacher performance and student learning.

This correlation between achievement emotions and perceived control and value congruency provide valuable information to the examination of teacher effectiveness under current educational reforms in the U.S. As educational policy and reform efforts continue to focus solely on the teacher's contributions to the co-production of education, teachers who do not feel in control of their students' achievement due to factors outside themselves may feel anxious or hopeless when being evaluated based on student test scores. Teachers who do not place great value on reforms that emphasize student test

scores and teacher evaluations based on such test scores may also experience negative achievement emotions such as frustration or anger. The precursors to these achievement emotions are critical because of their relation to effective teaching practices. The goal of any educational reforms is to enhance student learning and achievement; therefore, if current high-stake reforms are catalyzing negative achievement emotions in teachers, a more in-depth examination of such efforts should be undertaken.

Frenzel's contribution to the control-value theory of achievement emotions. Frenzel, a colleague of Pekrun, has focused her research on the control-value theory of achievement emotions as it applies to teachers' achievement emotions, specifically on how teachers' emotions impact academic instruction, and ultimately, student achievement.

In Frenzel et al.'s (2009) study, the researchers found significant correlations between teachers' achievement emotions and their instructional performance in the classroom. Those teachers whose goals of high achievement were congruent with the goals of their students, experienced more positive emotions, and conversely, those teachers whose goals of high achievement were incongruent with their students, experienced more instances of negative emotions:

> Those teachers who rated their classes as generally highly motivated and disciplined reported less anger and anxiety than their colleagues who generally rated their classes as unmotivated and undisciplined. Likewise, within teachers, lessons in which students were judged to be motivated and attentive provoked less anger and anxiety than lessons in which students were rated less motivated and disciplined. (Frenzel et al., 2009, p. 144)

Frenzel et al.'s (2009) research model was used as a reference for this study's research design. One significant goal of this specific selection of Frenzel et al.'s model was to substantiate whether teachers' perception of student achievement levels predicted teacher emotions in the classroom, and whether similar correlations could be established in this study. In addition, this research model was selected for this study to test the predictive value of achievement emotions on teaching practices. Because of the model's hypothesized correlations between teachers' perceptions of student achievement, achievement emotions, and instructional behavior it was considered an excellent framework for assessing teachers' achievement emotions under current educational reforms in the U.S., and for exploring how teacher perceptions and emotions may predict teaching practices in an educational system with high accountability components. Frenzel et al.'s (2009) research confirmed such correlations and provoked interest from this researcher to apply the same theory to a similar model.

The Impact of Educational Reforms on Achievement Emotions

Since the inception of NCLB, and currently with the federal *Race to the Top* (2009) competitive grant program, there has been a significant shift in educational policy in the U.S. towards greater accountability for student achievement being required from both the school and the classroom teacher. Achievement emotions experienced by a teacher under such policies may include: the excitement of being challenged, anxiety experienced by perceived pressures to facilitate enhanced student achievement, or frustration working with students who are not invested in the learning process. By linking the teacher's performance evaluation, and in some instances compensation, to student

achievement, it is logical to assume that teachers will experience more intense achievement emotions with these heightened expectations. This assumption is supported by the appraisal-theoretical framework, a foundational framework for the control-value theory of achievement emotions, and purports that the intensity of an emotional experience will be heightened if a situation is deemed as meaningful or germane to the individual. Intuitively, situations that are significant to a person involve them emotionally, and conversely, those events that are insignificant and irrelevant to an individual's goals will not evoke an emotional response.

Examining the impact, and hypothesized intensification, of achievement emotions under current and proposed educational reforms contributed to the selection of Pekrun's (2006) control-value theory of achievement emotions as this study's theoretical framework.

Coping

Lazarus and Folkman (1984) theorize coping as a dynamic process that is influenced by the individual's cognitive appraisal of the event; this appraisal then acts as a catalyst for emotional arousal (Folkman & Lazarus, 1988). The authors define coping as, "constantly changing cognitive and behavioral efforts to manage specific internal and external demands that are appraised as taxing or exceeding the resources of the person" (Lazarus and Folkman, 1984). Coping is dynamic, a "shifting process in which a person must, at certain times, rely more heavily one form of coping, say defensive strategies, and at other times, on problem solving strategies, as the status of the person-environment relationship changes" (Lazarus and Folkman, 1984, p. 142).

Coping can be categorized into two general forms: emotion-focused coping or problem-focused coping. Emotion-focused coping transpires when an individual apprises that nothing can be done to amend detrimental, hurtful, threatening, or taxing environment-person transactions (Schuster, Hammit, & Moore, 2003). The emotion-focused coping response entails the individual diminishing the emotional distress by "avoiding, distancing, selective attention, positive comparisons and finding positive value in negative events" (Schuster, Hammit, & Moore, 2003, p. 120). Using this coping strategy, the individual improves emotional suffering by changing the meaning and significance of the situation. Emotion-focused coping is integrated by the individual more often in stressful transactions that are appraised as unchangeable (Folkman & Lazarus, 1985) Problem-focused coping involves the individual being proactive in controlling or changing the sources of stress; this may include creating alternative solutions, learning a new skill, and exploring barriers to solutions. Problem-focused coping is used more frequently in situations in which the individual appraised the transaction as changeable (Folkman & Lazarus, 1985).

Lazarus and Folkman (1984) propose a "goodness-of-fit" hypothesis to an individual's coping response, which suggests that a person's coping will be most effective when there is a match between the changeability of the stressor and the appropriate form of coping applied to the stressor. Specifically, an individual will use more effective coping if the individual incorporates problem-focused coping when dealing with changeable stressors, and emotion-focused coping when dealing with unchangeable stressors.

Coping is an important variable in this research study because of its hypothesized function of mediating achievement emotions (Frenzel, Goetz, Stephens, & Jacob, 2009). As discussed earlier, research indicates that emotions abound in academic settings and such achievement emotions are intensified when the situation or event is of importance or has relevance to the individual (Frenzel et al., 2009; Pekrun, 2006; Pekrun et al., 2002). Teachers working under high-stakes accountability reforms may experience positive achievement emotions such as excitement or enjoyment, or may negative achievement emotions such as anxiety, fear, or anger. As discussed by Frenzel (2009) the emotions experienced by a teacher impact his or her teaching behavior. Teachers who experience positive emotions such as joy are more likely to implement strategies with higher levels of creativity and variation, whereas teachers experiencing negative emotions are more likely to use more rigid teaching strategies, such as rote memory tasks. Because emotions do impact teaching behavior it is important to assess whether a teacher's coping potential could mediate negative achievement emotions and thereby circumvent the implementation of less effective teaching strategies.

In Frenzel et al.'s (2009) study, the variable coping was not postulated as a mediating variable, but rather it was hypothesized to be a predictive value of teacher emotions, more specifically, Frenzel et al. postulated that a teacher's subjective appraisal of whether or not he or she had the coping potential to optimize teaching goals given other factors. In this current study, however, the coping element was hypothesized to be a mediating agent in teachers' handling of negative achievement emotions. For this study it was important for the investigator to assess whether achievement emotions would impact

teaching practices regardless of teacher coping response or whether teacher's coping response served as a protective factor, mediating the negative impact such emotions could have on teaching practices.

Coping is an important variable in this research study because of its hypothesized function of mediating negative achievement emotions (Frenzel, Goetz, Stephens, & Jacob, 2009). Research indicates that emotions abound in academic settings (Frenzel et al., 2009; Pekrun et al., 2002; Pekrun, 2006). Therefore for this current research study, a significant question was whether a teacher's coping response could effectively mediate negative achievement emotions and thereby circumvent the possible impact of such emotions on teacher behavior in the classroom.

The Coalescence of Two Theories

This dissertation sought to examine teacher effectiveness under current educational reforms using Pekrun's (2006) control-value theory of achievement emotions and Porter's (2011) theory of co-production. The two theories coalesce in their examination of factors impacting the teacher-student relationship and its subsequent impact on student achievement. Frenzel et al.'s (2009) research model provided the basis for this study's conceptual model, however, slight modifications were made to specifically examine the role of teacher coping response as it pertains to teacher effectiveness.

Theoretical Model for the Study

The hypotheses in this study were tested using the theoretical model expressed in Figure 3 (page 56), an adaptation of Frenzel's *Model of Reciprocal Causation Between*

Teacher Emotions, Instructional Behavior and Student Outcomes. The model assumes a correlational and directional relationship between the seven different components of the research design. The theoretical model postulates that a teacher's perceived level of control and the congruency between the teacher's value system and educational reforms will be positively correlated to a teacher's achievement emotions. The model begins with the variables: perceived control, attribution, perceived student achievement, and value correspondence variable. Based on the teacher's subjective appraisal of these four variables and their perceived correlation to success in achieving student goals, it is theorized, that the teacher will experience specific achievement emotions. These emotions will trigger the teacher's coping response, which, it is hypothesized will mediate the impact of emotions on teacher effectiveness. The final element of the hypothesized model is the variable "teacher effectiveness."

The first section of the theoretical model, as indicated by the color blue, pertains specifically to Pekrun's (2006) control value theory of achievement emotions. Once the classroom teacher is apprised of the achievement goals for his or her particular grade or position, the classroom teacher makes a subjective appraisal of the level of perceived success he or she will have in achieving these student learning goals with the specific students in his or her classroom. As indicated in Figure 3 on the following page, these four variables include: the teacher's perceived efficacy in meeting student achievement goals, the teacher's perceived control over student achievement based on student characteristics, to whom the teacher attributes responsibility for student achievement, and the value correspondence between the teacher's value system and educational reforms.

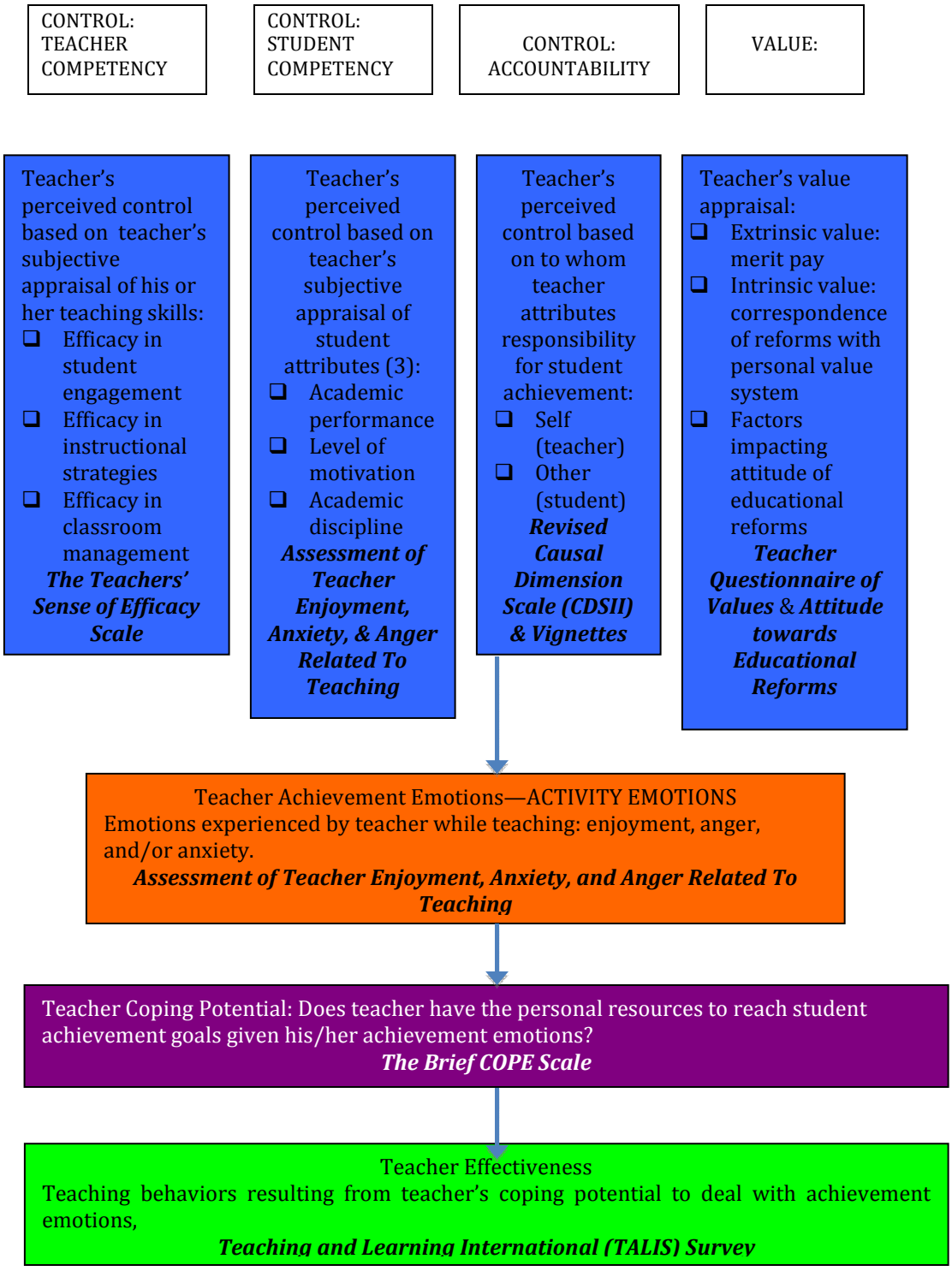

Figure 3: Theoretical Model

The downward pointing arrows leading from the blue section of Figure 3 to the orange section indicated the hypothesized relationship between the teacher's apprised sense of control and value correspondence and the achievement emotions experienced by the teacher.

The next section of Figure 3, as indicated by the color purple is "teacher's coping response." The downward arrow leading from teacher achievement emotions and teacher coping response indicates that the specific achievement emotions experienced by the classroom teacher will elicit a subsequent coping response.

The final component of this study's theoretical model is indicated by the color green and is labeled "teacher effectiveness." According to this model, it is hypothesized that the teacher's coping response to his or her achievement emotions will impact his or her effectiveness in facilitating student achievement. The downward pointing arrow connecting "coping response" to "teacher effectiveness" indicates the relationship between these two last variables in Figure 3.

Differences between this study's design and Frenzel et al.'s design. Frenzel et al.'s (2009), model of reciprocal causation between teacher emotions, instructional behavior and student outcomes, provided the framework for this research model; however, the model was adapted in a number of significant ways. As mentioned previously, in Frenzel et al.'s study, the variable coping was not postulated as a mediating variable, but rather it was hypothesized to be a predictive value of teacher emotions. In the current study the coping element was hypothesized to be a mediating agent in teachers' handling of negative achievement emotions.

The last significant difference between this study's theoretical model and that of Frenzel et al.'s is the latter's inclusion of "feedback loops" in their model to address recurring achievement emotions and their subsequent impact on instructional behaviors and student achievement. The model put forth in this research is more limited in scope and therefore does not address the impact of recurring achievement emotions on teaching behaviors and student achievement.

Hypotheses

This research study examined the following four hypotheses:

Hypothesis 1. A teacher's perceived level of control over student achievement will be significantly related to their achievement emotions and effectiveness in the classroom.

Hypothesis 2. The congruency between a teacher's value system and that of current educational reforms will be significantly related to their achievement emotions and effectiveness in the classroom.

Hypothesis 3. A teacher's coping response will be a significant mediating effect between a teacher's achievement emotions and their effectiveness in the classroom.

Hypothesis 4. There is a significant linear and directional relationship between a teacher's perceived control over student achievement, the congruency between the teacher's values and educational reforms, the teacher's achievement emotions and subsequent coping response, and, ultimately, his or her effectiveness in facilitating student achievement in the classroom.

Chapter 3: Methodology

Participants

Districts. Three urban school districts participated in the study. Each district was located on the Alaska road system and was comprised of elementary, secondary, K-8/K-12, charter, and alternative schools. Although each district represented different regions of the state, they shared many similarities.

Two of the three school districts that participated in the study had very similar numbers of teachers. The third district was smaller in student enrollment by eleven percent, and subsequently had fewer teachers (-8%). This smaller school district had four fewer elementary schools than the average of participating districts. This difference was not present with the number of secondary schools; however this smaller district operated more than double the average number of K-8 and K-12 schools of the participating districts.

Teachers. Two thousand three hundred and twenty-six (n=2,326) teachers were contacted through their district email addresses to participate in the study. All teachers within the respective districts were eligible for participation in this study, as there was neither exclusion nor restriction criteria based on participant demographic characteristics. Eight hundred and forty-one teachers completed the survey, a thirty-six percent (36%) response rate, with an overall sampling error of plus or minus 2.7%. According to Sheehan (2001) and Hamilton (2003) this was an acceptable response rate for this type of study. Sheehan (2001) noted in his review of 31 studies from 1986 to 2000, that average response rates for online surveys appear to be decreasing. The average response rate was

determined to be approximately 36%, but declined to 31% during the 1998-99 period. Hamilton (2003), in reviewing 199 online surveys, found a similar average response rate of 32.25%; furthermore, surveys with higher sample sizes (>1,000) had lower response rates on average.

The average age of the participants was forty-four year old (M_{age}= 44). The age category with the greatest representation was the category of teachers between 41-50 years old (n=246), which represented 29% of the study participants. The second largest age category was 51-60 years (28% of the sample), followed closely by those teachers aged 31-40 years (26%). Twelve percent of the study population was between the ages of 21-30, and the smallest population was those teachers 60 years or old or older (5%).

The majority of respondents were women teachers (n=604), representing 72% of the sample. Men teachers represented the remainder of the study population, with 28%. The majority of respondents categorized themselves as White (89%). The remaining eleven percent of the study population included (in order of representation): Native American or Alaska Native (2%), Hispanic (2%), “Other” (2%), mixed racial background (1%), Asian or Pacific Islander (1%), and black or African American (.2%). Three percent of the study’s participants (3%) declined to provide ethnicity information.

All participants in the study had achieved a minimum education level of a bachelor’s degree. Thirty-one percent 31% had earned credits beyond the bachelor’s degree, 22% had received Master’s degrees, 40% had earned credits beyond the Master’s degree, and 1% earned a doctorate of philosophy or education.

Participants had taught in public schools for an average of thirteen years

($X_{experience}$=13) at the time of this study. The largest group of respondents taught between 11-15 years (23%), followed by 20+ years (22%), 6-10 years (19%), 16-20 years (15%), 0-3 years (11%), and the smallest group taught between four and five years (10%). Participants were closely split between the school level at which they taught, elementary versus secondary schools, with 45% of participants teaching at the elementary level, 41% teaching at the secondary level, and 11% teaching at a combination of the two levels (i.e. K-12, K-8). The remaining three percent of respondents taught in nontraditional school settings such as at a youth facility or the district's home school program. Seventy-five percent (75%) of teachers taught at larger schools (451 or more students), followed by 21% of respondents who were working at schools with 126-450 students. The remaining four percent of teachers taught at small schools with 125 or fewer students.

Table 1 on the following page provides the demographic information of the study sample. The sample was considered representative of the target population (Alaskan teachers) as indicated by the correspondence of proportions across the study sample and the full population of all teachers in the three participating districts, and the state.

Table 1
Participant Demographic Information

	Sample Population n=841		Full Population n=3066		All Districts n=8339	
	n	%	n	%	n	%
Gender						
Male	237	28	920	30	2492	30
Female	604	72	2146	70	5847	70
Age (Years)						
21-30	103	12	273	9	1104	13
31-40	218	26	729	24	2114	25
41-50	246	29	928	30	2310	28
51+	274	33	1136	37	2811	34
Experience (Years)						
0-5	179	21	831	27	2710	32.5
6-10	163	19	725	24	1799	21.6
11-15	196	23	687	22	1679	20.1
16-20	122	15	476	16	1017	12.2
21+	181	22	347	11	1134	13.6
Education						
2 years or < college	0	0	36	1	43	0.5
Bachelors degree	61	7	1363	44	4865	58.3
Bachelors degree +	278	33	0*	0*	0*	0*
Masters/Specialist	164	20	1642	54	3393	40.7
Masters degree +	338	40	25	1	38	0.5
Ethnicity						
Caucasian	750	89	2885	93	7400	88.7
African American	2	0.5	33	1	97	1.2
Hispanic	15	2	33	1	119	1.4
Asian	9	1	39	1	161	2
Am. Indian/AK Native	19	2.5	71	3	421	5
2 or more Ethncities	10	1	10	0.5	100	1.2
Pac. Island/ Hawaiian	0	0	1	0	5	0.1
Missing/Decline	36	4	6	0.5	36	0.4

* Bachelors + category not available answer choice for full population.

A school's Title I status indicates the number of students who qualify for free or reduced meals at school based on Federal income poverty guidelines per household size (United States Department of Agriculture, 2013). A school's poverty level must be at least 40% to be categorized as a Title I school, which entitles it to special funding considerations from the federal government. Forty-eight percent of respondents stated they taught at a Title I school, forty percent stated they did not, and 12% did not know the Title I status of their school.

Measures

The Teacher Co-production Survey. *The Teacher Co-production Survey* is a compilation of published measures, as well as one questionnaire that was developed specifically for this study. Required permission to use questions from published measures is located in Appendices I-M. Some of the published measures were modified for this research, as will be discussed further in this section.

Variables Theoretically Linked to Achievement Emotions. The two variables central to Pekrun's control-value theory of achievement emotions (control and value) were assessed using five different measures within *The Teacher Co-production Survey*; these included: *The Teachers' Sense of Efficacy Scale* (Tschannen-Moran & Woolfolk Hoy, 2001); *The Assessment of Teacher Enjoyment, Anxiety, and Anger Related To Teaching.* (Frenzel, Goetz, Stephens, & Jacob, 2009); *The Teacher Questionnaire of Values and Attitude Towards Educational Reforms*, and, *The Revised Causal Dimension Scale* in conjunction with an adapted version of *The Teacher Causal Attribution Vignettes* (McAuley, Duncan, & Russell, 1992; Clark & Artiles, 2000).

Control – teacher factors. The level of control a teacher feels that he or she has over student achievement was assessed using an efficacy scale. *The Teachers' Sense of Efficacy Scale* (Tschannen-Moran & Woolfolk Hoy, 2001) was selected for this study to assess teachers' perceived sense of control over facilitating student achievement. This scale was developed by Tschannen-Moran & Woolfolk Hoy to assess the three major components of teaching: instructional strategies, classroom management, and student engagement. The authors found the scale to have acceptable reliability scores for personal teaching efficacy (α = .77); and general teaching efficacy (α = .72) (Hoy & Woolfolk, 1993). Research by Gibson and Dembo confirmed the scale validity in both convergent and discriminant validity (Hoy & Woolfolk, 1993, p. 289).

In this study, the response choices for *The Teachers' Sense of Efficacy Scale* were truncated from the published scale's five points to four points in an effort to provide consistency across the full survey (*The Teacher Co-production Survey,* Appendix N).

Control – student factors. The teacher's perceived level of control based on student characteristics was assessed using a portion of Frenzel et al.'s (2009) *Assessment of Teacher Enjoyment, Anxiety, and Anger Related To Teaching* was used to measure teacher's perceived level of control experienced based on student characteristics. The first section of this assessment tool was used, in which the teacher subjectively rates a specific class on three variables integral to student achievement: academic performance, motivation, and academic discipline. The teacher then rated the class in these three variables as: rather low, average, or high. (i.e. "Overall, how do you rate the level of academic performance in this class?").

Control – attribution. To whom the teacher attributes responsibility for student achievement was assessed using two instruments in conjunction with each other—*The* Revised *Causal Dimension Scale (CDSII)* (McAuley et al., 1992) and *The Teacher Causal Attribution Vignettes* (Clark, 1997), both of which were modified for this study.

In its original form, *The Teacher Causal Attribution Vignettes* were comprised of eight vignettes that described a student who had failed an exam. Specific reason for the student's failure on the exam was not provided, however the teacher was apprised of three student factors in each vignette: achievement ability, level of effort typically put forth by student, and the presence or absence of a diagnosed learning disability. Following each vignette, the teacher was prompted to provide evaluative feedback, rate their anger towards the student, rate their pity towards the student, rate their expectations following the student's failure, and to predict why the student failed (ability, effort, task difficulty, or luck). This data was then evaluated to determine the teacher's causal attribution for student achievement.

For this study, Clark's *The Teacher Causal Attribution Vignettes* were tailored to focus on student achievement as measured by students' performances on standards-based assessments. In the first scenario of the *Teacher Co-production Survey*, respondents were asked to read a short scenario describing a group of bright students who demonstrate attentive behaviors in class, complete their classwork on time, and were relatively high achieving academically. In the first scenario, these students performed poorly on the standards-based assessments. The second scenario presented the opposite details, in which the group of described students were lower performing and demonstrate less

desirable study skills and classroom participation. In this second scenario, the students performed well on the standards based assessments.

Following each vignette, the teachers were asked to attribute causation of the students' performance on the standards-based assessment to one of six responses (as opposed to the original four in Clark's vignettes): students' abilities, teacher's ability to teach these students; students' effort; effort of the teacher; test difficulty; and luck. For data analysis, the teachers' responses were then assigned to one of two categories of causal attribution: the first being "self," specifically the teacher indicated that he or she was responsible for the students' test performances; and, the second being "other," (the student, luck, or test difficulty), in which case the teacher indicated a factor outside of the teacher's control was responsible.

The Revised Causal Dimension Scale (CDSII). According to the attribution theory framework, there are three causal dimensions within the causal attribution framework: locus of causality (is the cause within the attributor or external to the attributor); locus of stability (is the cause stable over time or does it change); and, locus of control (is the cause controllable or uncontrollable) (McAuley et al., 1992). The CDSII is an assessment tool designed by Russell (1982) to gauge attribution along these three loci. The author from its original version revised the scale in an effort to improve the instrument's control subscale, a goal that was accomplished with the scale's latest revision (McAuley et al., 1992, p. 572).

The internal consistencies of the four scales were found to be within the acceptable range (between .60 to .92) for most dimensions, (McAuley et al., 1992, p.

569). Confirmatory factor analysis conducted by the study's authors demonstrated that the four-factor model was significant and, in comparison to those models that combined two or more of the dimensions, the four-factor model was superior.

For this study, respondents read two different vignettes (modified versions of Clark's *The Teacher Causal Attribution Vignettes*) discussing two different groups of students. After reading each vignette, the respondent selected one of six causal attributions (students' abilities, teacher's ability to teach these students; students' effort; effort of the teacher; test difficulty; or luck), based on how the respondent assigned responsibility for the students' performance on the standardized test. After selecting one causal attribution, the respondent then answered the twelve items of Russell's CDSII to determine the respondent's attribution of locus of causality, locus of stability, and locus of control.

Value. *The Teacher Questionnaire of Values and Attitude towards Educational Reforms* was created for this research to evaluate how a teacher's value systems correlate with educational reforms. The purpose of this instrument was three-fold; first, to assess teachers' attitudes towards current and proposed educational reforms; second, to assess how such attitudes were correlated to the respondents' value systems as professional educators, and third, to evaluate internal and external factors that impact a teacher's attitude towards educational reforms (i.e., the teacher's personal value system, or the opinions of colleagues at school).

This questionnaire consists of forty-two questions, and is organized into four different sections: "Attitude Towards No Child Left Behind," "Attitude Towards

Standards-Based Exams," "Attitude Towards Merit Pay," and "Internal and External Influences On Teacher's Attitude Towards Reforms." In constructing this section of the questionnaire themes and questions from three teacher opinion surveys were integrated: *Stand by Me: What Teachers Really Think About Unions, Merit Pay, and Other Professional Matters* (Public Agenda, 2003), *The MetLife Survey of The American Teacher: Collaborating for Student Success* (Markow, 2010), and Conley and Goldman's survey questionnaire from their study, *How Teachers Respond to State-Level Education Reform Policies* (1998). As mentioned previously, the authors of the original surveys provided their consent for the use and modifications of items from their instruments (see Appendices I-M).

The first section of *The Teacher Questionnaire of Values and Attitude towards Educational Reforms* asked respondents to express their level of agreement (agree, strongly agree, disagree, strongly disagree) with sixteen of the expressed goals of the *No Child Left Behind* legislation; i.e. "I believe that current educational reforms are providing students with an enriched educational program." The second section of the questionnaire asked respondents to express the level of congruency between the teachers' belief system and the use of standardized test scores under current and proposed educational policy; i.e. "I believe that Standards Based Assessment/High School Qualifying Exam Scores are a reliable indicator of student achievement." The third section of the survey solicited teachers to indicate the level of agreement between their belief system and different policy options related to merit pay for teachers; i.e. "I believe

merit pay for teachers, a.k.a. ‘merit pay,’ should be given to the teacher who consistently works harder, putting in more time and effort than other teachers.”

The fourth and final category of *The Teacher Questionnaire of Values and Attitude towards Educational Reforms* requested teachers to indicate the extent to which their values and attitudes towards current and proposed educational reforms are influenced by different factors such as their personal value system or the opinions of teaching colleagues. This section of the questionnaire was based on Conley and Goldman’s (1998) *Teacher Survey of Value of Reform Efforts*, specifically the “Attitudes Shaping Support” subscale, a survey designed by the authors to assess teachers’ attitudes towards state-level educational reforms in Oregon. For this study, *The Teacher Questionnaire of Values and Attitude towards Educational Reforms* asked respondents to indicate the degree to which eleven different factors impact their level of support for educational reforms since *No Child Left Behind*.

Teachers were instructed to indicate the degree to which each factor impacted their level of support towards educational reforms, from a four-point Likert scale of: none at all, very little, somewhat, and to a great extent. Respondents were asked to, “Choose the response that best matches the degree to which each factor impacts your attitude of support or nonsupport of educational reforms.” An example of the scale items included “my philosophical beliefs as a teacher,” or “my school’s history with school reforms,” and “my principal’s opinion of educational reforms,” to which respondents could respond, “none at all, very little, somewhat, or, to a great extent.”

Achievement emotions. Achievement emotions experienced by teachers in the classroom were measured using the second of two sections of *The Assessment of Teacher Enjoyment, Anxiety, and Anger Related To Teaching* (Frenzel et al., 2009).

In this portion of *The Assessment of Teacher Enjoyment, Anxiety, and Anger Related To Teaching*, respondent was asked to complete twelve items describing three different emotions (enjoyment, anxiety, and anger) experienced in the classroom while teaching this class. This portion of the assessment is comprised of twelve statements, four questions from each subscale. An example of one of these twelve items is: "I was worried that my teaching in this class was not really going well" (anxiety subscale). Response choices to these twelve items were on a four-point Likert scale: strongly agree, agree, disagree, and strongly disagree.

For this study, the twelve items of the three subscales were combined and randomized in such a way that items assessing each of the three emotions were not presented sequentially. In a study by the scale's authors the three subscales (enjoyment, anxiety, and anger) were found to be internally consistent (α = .92, .89, and .86 respectively) (Frenzel et al., 2009, p.140).

Coping response. To assess participants' coping response to stress in their lives, teachers were asked to complete selected items from *The Brief Cope Scale* (Carver, 1997). The scale's original author created this abridged version of the full scale COPE in an effort to provide researchers with an instrument that was smaller in scope and therefore less demanding of time from its participants, however provided the pertinent information regarding respondents' coping styles. The COPE Scale and Brief COPE Scale were

developed based on Lazarus and Folkman (1984) model of coping and from Carver and Scheirer (1981, 1990) model of behavioral self- regulation (Carver, 1997, p. 93).

For this research, nineteen items, representing eleven scales from the Brief COPE were selected. For the purpose of data analysis, responses to these nineteen items were dichotomized into either an "adaptive coping" category, or a "maladaptive coping" category, based on summated scores of the seven subscales for adaptive coping (Active Coping, Planning, Positive Reframing, Acceptance, Humor, Religion, and Using Instrumental Support), and the four of subscales for maladaptive coping (Self Distraction, Denial, Substance Use, and Behavioral Disengagement).

Carver (1997) established reliability and validity scores with high Cronbach's alpha values for the Religion ($\alpha = .82$) and Substance Use ($\alpha = .90$) scales, and acceptable values of Cronbach's alpha were established for the remaining selected subscales: Active coping ($\alpha = .68$), Planning ($\alpha = .73$), Positive Reframing ($\alpha = .64$), Acceptance ($\alpha = .57$), Humor ($\alpha = .73$), Using Instrumental Support ($\alpha = .64$), Self-distraction ($\alpha = .71$), Denial ($\alpha = .54$), Behavioral disengagement ($\alpha = .65$).

Yusoff , Low, & Yip (2010) determined that most of the sub-scales of the Brief COPE Scale demonstrated fair internal consistencies (Yusoff, Low, & Yip, 2010, p. 43). A study by Jacobson (2005) established the existence of three valid subscales, with reliability scores ranging from .75 to .82; these included: Positive Coping, Passive Coping, and Negative Coping.

Teacher effectiveness. A portion of *The Teaching and Learning International Survey (TALIS) Teacher Questionnaire* was used to assess teacher effectiveness. This

survey consisted of forty-three, close-ended questions. With permission from the OECD (Appendix K), question 42 from the TALIS Teacher Questionnaire was selected for *The Teacher Co-production Survey* to assess the frequency with which teachers implemented the three basic dimensions of instructional quality (classroom management techniques; student orientation; and, cognitive activation). Question 42 provided nineteen statements regarding teaching practices in the classroom (i.e. “I explicitly state learning goals.”). Respondents were then prompted to indicate how often such activities occurred in their classroom throughout the school year. The response choices were a five-point Likert scale ranging from “never or hardly ever” to “in almost every lesson.”

This question from the TALIS teacher survey was found to have mostly satisfactory reliabilities scores as indicated by acceptable values of Cronbach’s alpha its three subscales: structured classroom (α =. 73), student orientation (α =.70), and cognitive activation (α =.72).

Survey Revisions

Prior to implementing *The Teacher Co-production Survey,* a draft of the survey was presented to this researcher’s graduate committee. Following the recommendations of the committee, four revisions to the survey were completed, in addition to minor wording changes to improve clarity. The first revision involved the demographic section of the survey. Question five of the demographic section elicits the number of years the participant has been a teacher in the public school; the response choices were expanded to include more categories. In particular, the original category responses include 0-5 years and 6-10 years. The committee’s recommendation to expand these categories was based

on research by Markow (2010), which indicated that newer teachers in the U.S. leave the profession at a higher rate during the first five years of teaching. Therefore, expanding the number of response categories allowed for greater differentiation in the category of number of years experience. In addition to expanding the response choices in the demographic category of "number of years in the profession," the "school type" category (question 6) and "size of school" (question 7) response categories were expanded, per recommendations by the graduate committee as well. Expanding the response choices allowed for greater differentiation and accuracy in the data.

The second revision to the *Teacher Co-production Survey* recommended by the graduate committee was to improve the fluidity of the survey by presenting the survey questions in correspondence with the research design. Dillman et al. (2009) underscore the importance of flow in a survey design, comparing the organization of the survey to a "conversation," which, "tends to follow a logical order" (p. 157). By reordering the presentation of each section of the survey to mirror the research design, the flow of the survey was improved.

The third revision to *The Teacher Co-production Survey* was improving the consistency of response choices to the survey questions. Because the majority of the survey is comprised of formal, published scales, there existed variance amongst the scales in terms of the number of preset response choices. Scale response choices were modified to provide the respondent with four choices, as opposed to five and six choices in their original scale versions. However, the response categories of *The Revised Causal*

Dimension Scale (McAuley et al., 1992) were not truncated because such an alteration would endanger the integrity of this specific scale.

The fourth and final revision to *The Teacher Co-production Survey* pertained to *The Revised Causal Dimension Scale.* The vignettes section of this scale were altered in such a way to "flip flop" assumptions that a teacher may make about high achieving and low achieving students, i.e., that high achieving students would be more likely to pass standards-based assessments than low achieving students. In the two scenarios, the vignettes were altered such that the group of high achieving students was presented as not passing the standards-based exam, and the low achieving group of students was presented as passing the exam. The graduate committee recommended this change to force the respondent to think outside of the expected outcome, thereby provoking a more thoughtful response. The final version of the Teacher Co-Production Survey is located in Appendix N.

Procedures

Prior to the solicitation of participants and collection of data, a research proposal was submitted to the Institutional Review Board (IRB) at the University of Alaska Fairbanks. It was determined that this research project qualified for exemption from the requirements of 45 CFR 46, on November 1, 2011 (Appendix B). A second exemption was granted for the following year as well (Appendix C).

After IRB approval was gained, five of the larger school districts in Alaska were solicited for participation in the study, with the goal of achieving participation from a minimum of three districts. Larger, more diverse school districts were approached for this

study in an effort to garner a larger sample and cross section of teachers. In addition, larger, urban school districts were selected for their more diverse student populations, in contrast to the majority of rural school districts in Alaska that tend to serve students within a predominant culture, specific to its geographic location (i.e., Athabascan, Inupiat, Russian Orthodox populations).

Solicitations to conduct research were submitted to each of the five districts, and three districts agreed to participate. Two districts required formal applications; copies of the applications are located in Appendix D and E. The third district consented through email correspondence (See Appendix F).

In line with Dillman et al.'s (2009) survey design recommendations, prior to sending out the survey, an email to the three districts' principals was sent to inform them of the survey (Appendix G). The initial invitation e-mail was sent to all prospective participants' official school district email addresses on January 3, 2012 (Appendix H). The invitation stated the purpose of the survey, provided the Web link through the online survey tool Survey Monkey, as well as a link for the participant to opt out of the study and from any further email correspondence. Once prospective participants clicked on the provided Survey Monkey link, they were directed to the informed consent page of the survey. Teachers who provided informed consent to participate in the study were then immediately granted access to the survey. The survey was available for one month, and a reminder email was sent to all subjects who had not completed the survey one week after the survey was available, and one week prior to the closing of the survey.

Incentives. The initial email invitation also discussed the participation incentives associated with survey completion. As noted by Dillman et al. (2009), incentives may be offered to help encourage responses, therefore, the first two hundred individuals who completed the survey and furnished their email addresses received a $10 *Apple ITunes* card, and all participants who completed the survey and provided their email addresses were entered into a random drawing for an *Apple IPad*. Participants were informed that their email addresses would be separated from their survey responses through a filter system provided by Survey Monkey to avoid any chance of linking participants' identifying information with information provided in the survey. A random number generator was used to select the *Apple IPad* winner from the total number of eligible participants. Winners of the incentive prizes were contacted by email a week after the close of the survey.

Chapter 4: Results

Psychometrics of Study's Scales

As a first step in the data analysis, teachers' sense of efficacy, teachers' attitude towards educational reform, teachers' attribution of student achievement, teachers' achievement emotions and coping responses, and teachers' implementation of effective teaching practices, were analyzed using SPSS to determine accuracy of data entry, missing values, and fit between variable distributions and the assumptions of multivariate analysis. Participant responses were found to be within normal distribution on each measure as indicated by the lack of significant kurtosis or skewing in response distribution to scale questions. None of the independent variables retained for analyses (gender, age, experience, and education level) demonstrated multicollinearity.

Reliability of The Teacher Co-production Survey. To calculate the internal consistency and reliability of *The Teacher Co-production Survey*, Cronbach's alpha was calculated for each of the survey's scales and subscales. A reliability score of .70 and higher is considered internally consistent; therefore only scales and subscales with this minimum score were used for further analyses (Rea & Parker, 2005, p. 73). Table A.1 (See Appendix A) lists the Cronbach's alpha scores for the study's instruments. Of the six full scales, all but one (*The Assessment of Teacher Enjoyment, Anxiety, and Anger Related to Teaching*, $\alpha = .48$) demonstrated acceptable reliability scores of .70 and higher. *The Assessment of Teacher Enjoyment, Anxiety, and Anger Related to Teaching* achieved an acceptable reliability score ($\alpha = .86$) with the removal of the Enjoyment Subscale;

therefore, all further analyses utilizing the *Assessment of Teacher Enjoyment, Anxiety, and Anger Related to Teaching* scale were facilitated without the Enjoyment Subscale.

Six of the twenty-four subscales in this study did not achieve an acceptable reliability scores of .70 or higher. From the *Teacher Questionnaire of Values and Attitude Towards Educational Reforms*, the "Attitude Towards SBAs" subscale had a reliability score of $\alpha = .26$. This score improved to a reliability score of $\alpha = .67$ with the removal of two items (i.e. "I believe standards based assessments (SBAs) /HSQE scores are a valid indicator of teacher effectiveness;" and, "I believe standards based assessments (SBAs) /HSQE scores a reliable measure of student achievement."), however remained below the desired reliability score of .70; therefore, this subscale was eliminated. The Causal Dimension Scale, Revised, for "Self-Attribution" was a reliable measure with all of its four subscales achieving reliable scores as well. However, The Causal Dimension Scale, Revised, for "Other Attribution" had two subscales, the Locus of Causality subscale ($\alpha = .67$) and Locus of Stability subscale ($\alpha = .64$), that did not achieve scores high enough to be considered reliable. The scale in its entirety did achieve a reliable score ($\alpha =. 79$), despite the two unreliable subscale scores, and thus only the full scale of the Causal Dimension Scale, Revised, for "Other Attribution" was examined further.

As mentioned briefly earlier, the Maladaptive Subscale of the *Brief COPE* was deemed unreliable due to its reliability score of .57 and was eliminated from further analysis. The full scale *Brief COPE* and Adaptive Coping subscale both exhibited satisfactory reliability scores with alpha levels of .76 and .75, respectively; therefore the full scale and Adaptive Coping subscale were used for further analyses. Lastly, the full

scale Teaching and Learning International Survey, employed in this study to assess teacher effectiveness, achieved an acceptable reliability score of $\alpha = .75$, as did its Enhanced Student Activities subscale ($\alpha = .70$). However the remaining two subscales Student Orientation ($\alpha =. 66$) and Classroom Structure subscale ($\alpha = .59$) did not and subsequently were eliminated from further analyses.

Selection of Study Variables

Gender, age, ethnicity, number of years teaching experience, teacher education level, Title I status of school, school size (number of students) and level (i.e. elementary, middle school, etc.) were independent variables in this study. Four of these eight variables were retained for analysis: gender, age, number of years teaching experience, and teacher education level. Because of the homogeneity of ethnicity in this study (89% self-reporting Caucasian), ethnicity was eliminated from further analysis. School characteristics as they applied to the teacher's work place (Title I status, student body size, and school level) did not provide significance to the analyses and were subsequently eliminated as well. Lastly, data was not disaggregated by school district to maintain district confidentiality.

Analyses of Participant Demographics and Assessment Measures

The strength and significance of the relationships between study variables was analyzed using the chi-square test of significance; these results are located in Table A.2 (See Appendix A). Data were analyzed to determine if a significant relationship existed between the respondents' demographic data and their sense of efficacy (Table A.3, See Appendix A), their attitude towards educational reforms and those factors impacting such

attitudes (Table A. 4, See Appendix A), the relationship between the teachers' subjective assessment of student achievement, (Table A.5, See Appendix A), the emotions they experienced while teaching (Table A.6, See Appendix A), teachers' coping skills (Table A.7, See Appendix A), as well as teachers' implementation of effective pedagogical strategies that they implement in the classroom (Table A.8, See Appendix A).

Cramer's V was used as the measure of association between the nominal variables above. Cramer's V was used to determine the strength of the relationship between the cross-tabulated variables discussed above in the chi-square tests of significance.

Means and standard deviations of scales, and correlations between demographic variables and scale items. As discussed in the prior section, Table A.2 (See Appendix A) provides the correlations between the individual scales, its subscales, and demographic variables; whereas, tables A.3 through A.8 (See Appendix A) provide the correlations between the individual scale items and the demographic variables. Tables 2 through 6 (below) provide qualitative overviews of these correlations (between the individual scale items and the demographic variables). These findings are discussed in the following subsections, which are organized by scale.

The Teacher's Sense of Efficacy Scale. The Teacher's Sense of Efficacy Scale was comprised of 24 questions. The response choices were a Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree). The mean score of *The Teacher's Sense of Efficacy Scale* was 3.15, with a standard deviation of .46. A small but expected positive correlation existed between the full scale and age (.16**), experience (.24**) and education level (.13**). The Student Engagement subscale was also positively and

significantly correlated to age (.12**) and experience (.14**). The subscale, Classroom Management, also demonstrated a small but significant correlation with age (.13**), experience (.24**), and education (.13**). Table A.3 (See Appendix A) provides the correlations between demographic variables and each individual scale item. Table 2 below summarizes these findings.

Table 2
Teachers' Sense of Efficacy Scale: Summary of Findings

Demographic	Finding
Gender	There was not a significant difference between male and female teachers and their sense of efficacy in the classroom.
Experience Level	As would be expected, the teachers' experience level was very significantly related to their belief in their abilities to successfully facilitate student achievement. Teachers with more experience felt significantly more efficacious in their abilities to engage students, manage their classrooms, and facilitate instruction.
Education Level	Teachers with higher education levels felt more efficacious overall in their ability to teach students. With greater levels of education, teachers felt significantly better able to provide effective instruction and manage their classrooms. Education level, however, was not significantly related to student engagement.
Age	Mirroring the significant correlations between experience level and teacher's sense of efficacy, as teachers get older they feel significantly more efficacious in their overall teaching ability, including their ability to engage students in the academic task, manage their classrooms, and provide effective instruction.

***The Teacher Questionnaire of Values and Attitude Towards Educational Reforms*.** This scale was comprised of 40 statements regarding current and proposed reforms. Response choices were in the form of a Likert scale with 1 = strongly disagree and 4 = strongly agree. The mean score of *The Teacher Questionnaire of Values and Attitude Towards Educational Reforms* was 2.58 with a standard deviation of .590. Correlations between the scale and the demographic variables revealed a number of modest but significant relationships. Teachers' overall agreement with current and proposed education reforms was negatively correlated with teacher age (-.13**), experience (-.19**), and teacher education level (-.11**). The NCLB subscale was negatively and significantly correlated to teacher age (-.07*). A modest but significant, negative correlation existed between the Merit Pay subscale and all of the demographic variables: gender (-.09**), age (-.16**), experience (-.25**), and education level (-.11**). Table A.4 in the Appendix (See Appendix A) provides the correlations between demographic variables and each individual scale item. Table 3 on the following page summarizes these findings.

Table 3
Teacher Questionnaire of Values and Attitude Towards Educational Reforms: Summary of Findings

Demographic	Finding
Gender	There were no significant differences between men and women teachers and their overall attitude towards current and proposed education reforms. However, there was a significant difference between their views on merit pay, with male teachers being more supportive of pay-for-performance incentives than their female colleagues. Men teachers were more receptive than their female colleagues to merit pay for those teachers whose students score higher on standardized tests, specialize in hard-to-fill subjects, and work with at-risk students or in at-risk schools.
Experience Level	A teacher's experience level was very significantly related to their attitude towards educational reforms—with more experience in the classroom, teachers were less receptive to overall current reforms in education. Teachers with more experience differed very significantly from their less experienced colleagues in opposing merit pay. Their philosophical beliefs as a teacher, classroom experience, and educational coursework all contributed to differentiating themselves from their less experienced peers in opposing current educational reforms.
Education Level	Teachers who attained higher levels of education were significantly less supportive of educational reforms than their less educated peers, specifically federal No Child Left Behind legislation and merit pay.
Age	Age was not a significant factor in teachers' overall attitude towards educational reforms. However, older teachers differed significantly from their younger colleagues in their disbelief that NCLB is providing an accelerated education program and facilitating challenging content for students. In addition, older teachers did not believe that teacher quality has improved under NCLB professional development. Older teachers differed from their younger peers in their belief that the use of standardized assessments to monitor teacher effectiveness creates stress for teachers and encourages educators to teach to the test—other sources of information should be used according to the more senior teachers.

Causal Dimension Scale, Revised, and Student Achievement Vignettes. After reading two short vignettes regarding students' performances on a test, the study participants indicated whether they attributed the students' performances to the teacher (attribution to self) or to factors outside of the teacher (attribution to "other"). Based on their responses, participants were automatically directed to complete the appropriate *The Causal Dimension Scale, Revised,* for self-attribution or "other" attribution, depending on their selected response. After reading each of the two vignettes, the respondent read twelve attribution statements and selected a number from 1 to 9 on a Likert scale indicating their agreement with the statement. The mean score of those teachers who attributed responsibility for student achievement to the teacher was 5.23, with a standard deviation of 2.50. The mean score of those teachers who attributed responsibility for student achievement to factors outside of the teacher was 5.12, with a standard deviation of 2.78.

Demographic variables for both attribution types (self and "other") were not correlated significantly with *The Causal Dimension Scale, Revised,* with the exception of one subscale, the Locus of Personal Control subscale of the self-attribution subscale. The correlation between this subscale and gender was (-0.07^{*}). Of those respondents who attributed student achievement to the teacher, there was a significant difference between male and female teachers in terms of how they perceived personal control over student achievement. Male teachers expressed less control over student achievement, and placed power over student achievement outside themselves significantly more than their female counterparts.

The Assessment of Teacher Enjoyment, Anxiety, and Anger Related to Teaching. This scale was comprised of 4 subscales: Teacher rating of student achievement level subscale, the Enjoyment subscale, the Anxiety subscale, and the Anger subscale.

The Teacher Rating of Student Achievement Level subscale assessed the teachers' subjective appraisal of his or her class' academic performance by having the teacher rate the class on perceived levels of academic performance, motivation, and academic discipline. The answer choices included "rather low (1)," "average (2)," or "high (3)" for a possible total of overall achievement level of 9. The mean score on this subscale was 6.01 with a standard deviation of 1.70. Teacher rating of student achievement levels was significantly correlated to age (.08*) and experience (.07*), and is described in further detail in Table 4 on page 89.

The remaining three subscales of *The Assessment of Teacher Enjoyment, Anxiety, and Anger Related to Teaching* were each comprised of four statements concerning emotions experienced in the classroom. Respondents indicated how they typically felt when they were teaching a specific class (i.e. "I felt tense and nervous teaching this class."), and responded to a Likert scale ranging from 1 to 4, with 1 indicating strongly disagree and 4 indicating strongly agree. The mean score of teachers experiencing negative achievement emotions (the remaining scale items assessed negative emotions because of the removal of the Enjoyment subscale) was 1.68 with a standard deviation of .58. Correlations between the scale and the demographic variables revealed a number of modest but significant relationships. However, age (-.11**), education level (-.09**) and

teaching experience (-.17**) were all significant factors in how frequently a teacher experienced negative achievement emotions in the classroom. Gender was not a significant influence on teachers' achievement emotions in the classroom.

Correlations between the demographic data and the subscales of *The Assessment of Teacher Enjoyment, Anxiety, and Anger Related to Teaching* also demonstrated small but significant differences between groups. Teacher's age was negatively correlated with anger (-.12**) and anxiety (-.08*), but positively correlated with his or her subjective appraisal of classroom achievement levels (.08). Teaching experience mirrored these results, with experience being negatively correlated with anger (-.14**) and anxiety (-.18**), yet positively correlated with teacher rating of class (.07*). The level of educational attainment achieved by the classroom teacher was also correlated modestly to teacher's experience of anger (-.08*) and anxiety (-.09**). These results are summarized in the Table 4 on the following page.

Table 4
Assessment of Teacher Enjoyment, Anxiety, and Anger Related To Teaching: Summary of Findings

Demographic	Finding
Gender	There was not a significant difference between male and female teachers in the amount of anxiety or anger they felt in the classroom. However, gender did play a role in how a teacher subjectively appraised their students' performances, with male teachers being significantly more likely to rate the academic performance of their class higher than female teachers.
Experience Level	Teachers with more experience in the classroom experience significantly fewer negative achievement emotions overall than their less experienced peers. In addition, more experienced teachers rated their students' achievement and motivational levels significantly higher than their less experienced teaching colleagues.
Education Level	Teachers' education level was significantly related to feelings of anxiety and anger in the classroom. Teachers who attained higher levels of education experienced less negative achievement emotions overall than those teachers with less education.
Age	Feelings of anger and anxiety were negatively correlated with teacher age. Older teachers reported significantly fewer incidents of feeling angry or anxious during teaching compared to their younger colleagues. Older teachers were also more likely than younger teachers to rate their class' academic and motivation levels higher than their younger peers.

The Brief COPE Scale. This scale was comprised of nineteen items in which responders were presented with different coping responses, and had to respond to each statement with "never (1)," "sometimes (2)," "often (3)," and "very often (4)." The

majority of statements represented adaptive coping responses (n = 13), and those that were maladaptive coping responses (n = 6) were scored in reverse. The mean score on the full scale was 3.13, with a standard deviation of 2.89. Gender was significantly, although modestly, correlated with the full scale *Brief COPE* (.17**), however no other demographic variables demonstrated a significant correlation with the full scale.

A number of slight, but significant, correlations existed between the Adaptive subscale of the *Brief COPE* and gender (.17**), age (.10**), and teaching experience (.08*). Teachers' education level was not significantly correlated to the full scale or any of its subscales. The summary of findings of the *Brief COPE* and its subscales is provided below in Table 5.

Table 5
The Brief COPE: Summary of Findings

Demographic	Finding
Gender	There was a significant difference between male and female teachers' adaptive coping response. Female teachers respond to stressors using adaptive coping strategies more often than their male colleagues.
Experience Level	As teachers gain more experience, they implement more adaptive coping skills, such as talking about their problems and active problem solving. A significant relationship existed between experience and teachers implementing adaptive coping strategies.
Education Level	There was not a significant difference between teachers' education level and their use of adaptive coping skills.
Age	There was a significant difference between older and younger teachers' implementation of adaptive coping strategies, as older teachers implement more adaptive coping strategies than their younger peers.

The Teaching and Learning International Survey Teacher Questionnaire. The TALIS Teacher Questionnaire was comprised of eleven statements regarding effective pedagogical practices. Selecting from a Likert scale, respondents indicated how often they implemented the teaching strategy ("never" (1), "sometimes"(2), "quite a bit" (3), and "almost always" (4). The mean score of the full scale was 2.47 with a standard deviation of 2.47. Small but significant correlations existed between the TALIS full scale and teacher experience (.08*) and teacher education level (.08*). The subscale Student Orientation was also found to be significantly correlated with gender (.10**). There were no other significant correlations between the TALIS full scale and subscales and this study's demographic variables. Table 6 on the following page summarizes these findings.

Table 6
The Teaching and Learning International Survey (TALIS): Summary of Findings

Demographic	Finding
Gender	There was a significant difference between male and female teachers' implementation of student-oriented practices in the classroom. Female teachers differentiate instruction based on student ability and encourage debate more often than their male colleagues.
Experience Level	As teachers gain more experience, they implement effective teaching strategies with greater frequency than their less experienced peers. More experienced educators will differentiate instruction and grouping based on ability more often than less experienced teachers. Teachers who have taught longer are more likely to explicitly state the learning goals and review homework with students. More seasoned teachers are also more likely to facilitate enhanced learning activities with their students.
Education Level	Teachers who have attained higher levels of education implement effective pedagogical strategies more often than those teachers with lower education levels. For example, teachers with more education ask their students to compose essays and explain their thinking more often than those teachers with less education.
Age	Age was not a significant indicator of how often a teacher implemented effective teaching strategies or not.

Correlations between study scales. Table 7, following this section, contains the correlations between the study's scales. All correlations followed expected directional relationships (i.e. negative versus positive). A significant, positive correlation existed between *The Teaching and Learning Instructional Survey* and *The Teacher's Sense of Efficacy Scale* (.40**) and *The Brief Cope Scale* (.19**).

Very modest, positive correlations existed between *The Teaching and Learning Instructional Survey* and *The Teacher Causal Attribution Vignette-Self Attribution* (.08*),

The Teacher Questionnaire of Values and Attitude Towards Educational Reform (.12**), and *The Student Achievement Teacher Rating Scale* (.10**). A negligible, but significant, negative correlation existed between *The Teaching and Learning Instructional Survey* and *The Assessment of Teacher Enjoyment, Anxiety, and Anger Related to Teaching* (-.09*).

A moderate, negative correlation (-.33**) was present between *The Teacher's Sense of Efficacy Scale* and *The Assessment of Teacher Enjoyment, Anxiety, and Anger Related To Teaching*. A minor, though significant, positive correlation existed between *The Teacher's Sense of Efficacy Scale* and The Student Achievement Teacher Rating subscale (.17**), and a more moderate relationship was present between the Teacher's Sense of Efficacy Scale and The Brief COPE scale (.34**). Minor, significant, positive correlations existed between the *Teacher Causal Attribution Scale"Other" Attribution* and *The Teacher Questionnaire of Values and Attitude Towards Educational Reform* (.12**) and *The Brief Cope* scale (.07*). Similarly, a subtle positive correlation was established between *The Teacher Questionnaire of Values and Attitude Towards Educational Reform* and *The Brief COPE* (.10**). Lastly, significant negative correlations of moderate levels existed between *The Assessment of Teacher Enjoyment, Anxiety, and Anger Related to Teaching* and the Student Achievement Teacher Rating subscale (-.36**) and the *Brief COPE* (-.22**).

Table 7
Correlations Between Assessment Measures

Measure	TALIS	TSES	Vignettes-Self	Vignettes-"Other"	Questionnaire Values/Attitude	Frenzel Assessment	Student Achievement	COPE
TALIS	1	.40**	.08*	-0.06	.12**	-0.09	.10**	.19**
TSES		1	0.05	-0.04	0.05	-0.33	.17**	.34**
Vignettes-Self			1	-0.51	.12**	0.02	0.00	.07*
Vignettes-"Other"				1	0	0.03	-0.05	-0.06
Questionnaire Values/Attitude					1	0.05	-0.03	.10**
Frenzel Assessment						1	-0.36	-0.22
Student Achievement							1	0.04
COPE								1

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Path Analyses to Evaluate Hypotheses

The study's hypotheses are visually represented in the *Hypothesized Path Model of Teacher Effectiveness* (Figure 1, p. 26). This recursive model represents the study's hypothesized predictors of teacher effectiveness, beginning with those variables predicted to elicit achievement emotions (control, student achievement, attribution, and value correspondence between teachers and reforms), followed by the subsequent achievement emotions experienced by the individual, trailed by the predicted mediating variable teacher coping response, and concluding with the variable teacher effectiveness. Measured (observed) variables are represented by rectangles. Arrows connecting variables represent a hypothesized, directional relationship between the model's variables, and the absence of a connecting line indicates a hypothesized lack of direct effect.

Assumptions

The study's assumptions were evaluated through the statistical programs *SPSS*© and *AMOS*©. The data set contained responses from 841 teachers. The hypothesized model (and the subsequent post hoc model) was estimated with maximum likelihood estimation and evaluated by three different attributes: goodness of fit indices, strength of relationships among the variables, and the significance of causal paths.

To evaluate goodness of fit, well-established indices were selected for analyses, these included: model chi-square, CMIN/DF, GFI, AGFI, CFI, and RMSEA. The model chi-square is the most straightforward fit statistic and is the product (N-1) F_{ML}, with N-1 representing the sample's overall degrees of freedom, and F_{ML} equaling the statistical criterion minimized in maximum likelihood estimation (Kline, 2005, p. 135). The

researcher fails to reject the null hypothesis, and in doing so supports the researcher's model, when the model's resulting chi-square score is non-significant. A non-significant chi-square score is desired as an indicator of a good fitting model;

> Therefore it is the failure to reject the null hypothesis that supports the researcher's theory. This logic is backward from the usual reject-support context for statistical tests where it is the rejection of the null hypothesis that supports the researcher's theory. (Kline, 2005, p. 136).

The CMIN/DF is a chi-square based measure of discrepancy, which uses the maximum likelihood estimation chi-square test and divides the minimum discrepancy by its degrees of freedom (Kline, 2005, p. 136). The CMIN/DF model fit index is sensitive to sample size; it can reject path models that may be plausible with bigger sample sizes. The equation for calculating the CMIN/DF is: X^2/df.

The goodness-of-fit index (GFI) and the adjusted goodness-of-fit index (AGFI) are absolute fit indexes that "estimate the proportion of variability in the sample covariance matrix explained by the model" (Kline, 2005, p. 143). The AGFI adjusts the estimate based on model complexity, with higher index scores achieved by less complex models. The GFI is calculated by subtracting from 1 the quotient of F_{ML} by the value of fit function when all model parameters are zero (F_0): $1 - F_{ML}/F_0$. Adjusting for parsimony, the AGFI is calculated with the following equation: $1 - (1 - GFI)\ [v\ (v + 1) / 2df_m]$.

The comparative fit index (CFI) gauges the relative enhancement of model fit of the researcher's model compared with the null model of zero population covariances among the observed variables (Kline, 2005, p. 140). The CFI assumes that all latent

variables are uncorrelated and this is the null model to which the sample covariance is compared. It is calculated by the following formula: (X^2-df)(null model) - (X^2-df)(proposed model)/((X^2-df)(null model). The CFI is used often in structural equation modeling because it is one of the fit indices that is least impacted by sample size (Kline, 2005, p.140).

The Root Mean Square Error of Approximation (RMSEA) is also a parsimony-adjusted index, providing more favorable model fits for those models that approximate the data similarly to more complex models however with less intricacy (Kline, 2005, p. 137). The RMSEA estimates a non-central chi-square distribution by measuring the degree of falseness of the null hypothesis, and therefore the degree of misspecification of the researcher's model. The expression for calculating RMSEA is $\sqrt{\delta_M/df_m}(N-1)$. Kline (2005) describes the RMSEA as a "badness-of-fit" index in which a calculation of zero is indicative of the best fit, and values greater than zero indicate a more inferior fit (p. 138). RMSEA values less than or equal to.05 indicate a good model fit.

Index scores for the GFI, AGFI, and CFI that are greater than .90 are considered acceptable, and scores of .95 and higher indicate the model fits the data well (Tabachnick & Fidell, 2007). According to Tabachnick and Fidell (2007) an RMSEA score that is less than .06 is considered a good fit.

In evaluating strength of relationships among variables, standardized paths should be at least 0.20 and "ideally above 0.30 to be considered meaningful for discussion" (Hoe, 2008, p. 79). Significance of path coefficients of $p < .05$ or less indicate that the null hypothesis can be rejected (Hoe, 2008, p. 79).

Model Estimation

There was only marginal support for the hypothesized path model (Chi Square 273.40, $p < .00$, CMIN/DF= 18.23, GFI= .92, AGFI= .86, CFI = .53, RMSEA= .14). Despite the model's achieved Goodness of Fit Index of .92, the model's chi-square was significant indicating a non-fitting model. The CFI of .53 was well below the desired .95, and the RMSEA of .14 missed the preferred minimum of .08. However, the model's paths did indicate significance in five out of the seven paths, with each significant path demonstrating moderate to strong causality, as seen in Table 8 below.

Table 8
Standardized Regression Weights of Paths in Hypothesized Teacher Effectiveness Model

Causal Path	Path Coefficient	SE
Achievement Emotions<---Perceived Control	-0.38***	0.04
Achievement Emotions<---Value	0.06	0.07
Achievement Emotions<---Student Achievement	-0.30***	0.03
Achievement Emotions<---Attribution	0.02	0.02
Coping<---Achievement Emotions	-0.11***	0.03
Teacher Effectiveness<---Coping	0.33***	0.04

***p<.001

Post Hoc Model

Post hoc model modifications were facilitated in an attempt to create a better fitting model for predicting teacher effectiveness. Significant fit improvement resulted by adding two paths from the variable control, one to student achievement, and the other to teacher effectiveness, as well as by eliminating two of the model's variables, teacher's value correspondence with educational reforms and attribution, and their non-significant paths to achievement emotions. This is illustrated in Figure 4 *Post-Hoc Model of Teacher Effectiveness* on the following page.

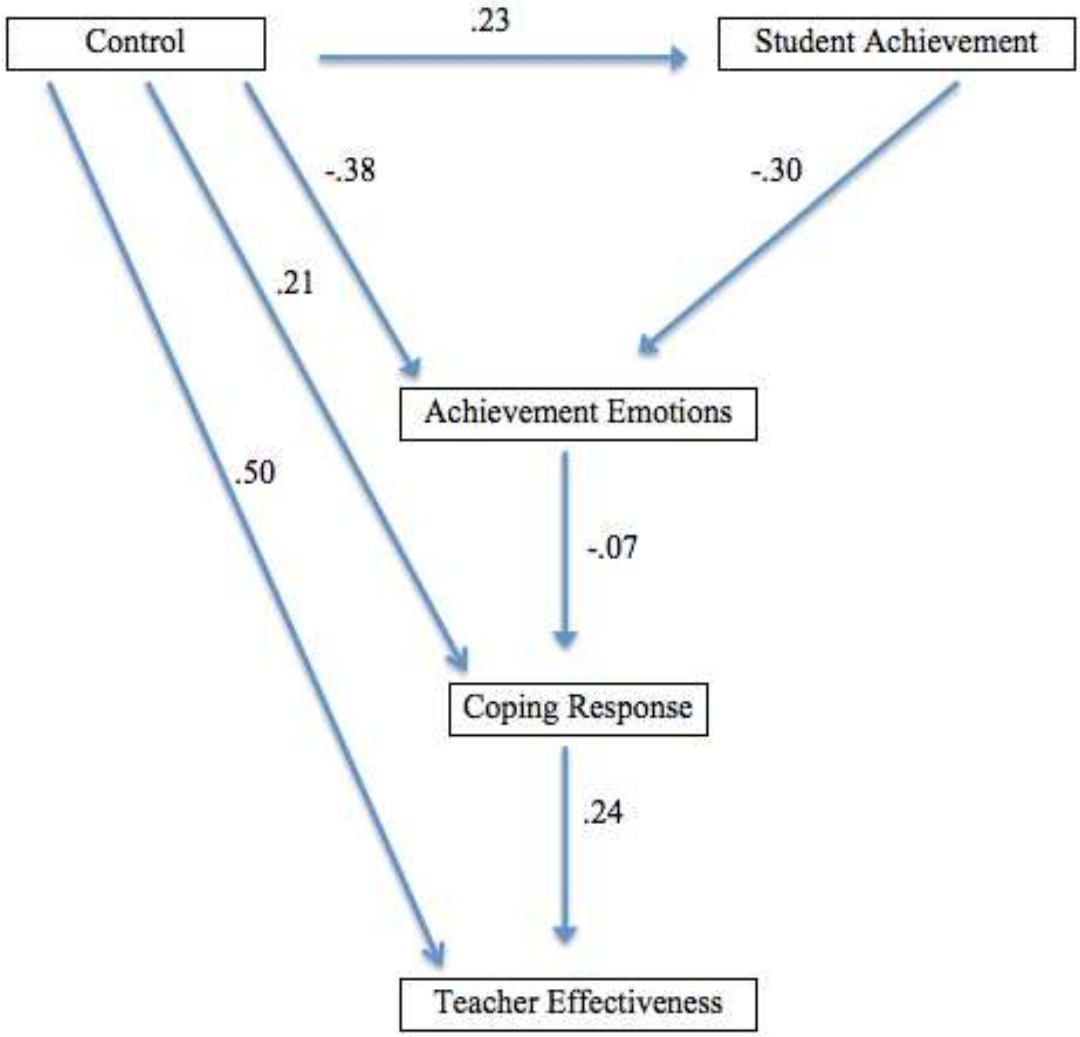

Figure 4: Post-Hoc Model of Teacher Effectiveness

With these modifications, the post hoc model fit the data and achieved a desirable, non-significant chi-square of 3.63 ($p < .305$). This model enhancement also resulted in more favorable model fit scores (CMIN/DF= 1.21, GFI= 1.00, AGFI= .99, CFI= 1.00, and RMSEA= .02). All of the seven paths in the Post Hoc Model were very significant and exhibited estimates ranging from modest to strong, as shown in Table 9 (See page 101).

Table 9
Standardized Regression Weights of Paths in Post Hoc Teacher Effectiveness Model

Causal Path	Path Coefficient	SE
Student Achievement<---Perceived Control	0.23***	0.05
Achievement Emotions<---Perceived Control	-0.38***	0.04
Achievement Emotions<---Student Achievement	-0.30***	0.03
Coping<---Perceived Control	0.21***	0.02
Coping<---Achievement Emotions	-0.07***	0.02
Teacher Effectiveness<---Coping	0.24***	0.07
Teacher Effectiveness<---Perceived Control	0.50***	0.05

***p<.001

Group Comparisons

The post-hoc path model was analyzed across the different demographic groupings (teacher age, experience level, gender, and education achievement) to assess model fit. Table 10 and Table 11 on the following pages (See pages 102 and 103) illustrate the models' Maximum Likelihood Estimates (MLE), Standard Errors (SE) and Goodness of Fit indices.

Table 10
Maximum Likelihood Estimates of Post-Hoc Model of Teacher Effectiveness for Gender, Age, Education, and Experience

	Post Hoc Model		Gender		Age		Education		Experience	
Causal Path	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
Student Achievement<-- Perceived Control	0.23***	0.05	0.23***	0.05	0.22***	0.05	0.23***	0.05	0.22***	0.05
Achievement Emotions<-- Perceived Control	-0.38***	0.04	-.38***	0.04	-0.37***	0.04	-0.37***	0.04	-.35***	0.04
Achievement Emotions<-- Student Achievement	-0.30***	0.03	-.30***	0.03	-0.30***	0.03	-0.30***	0.03	-.30***	0.03
Coping Response<-- Perceived Control	0.21***	0.02	0.02	0.05	0.02	0.03	0.04	0.03	-.01	0.03
Coping Response<-- Achievement Emotions	-0.07***	0.02	0.01	0.02	0.02	0.02	0.00	0.02	-.01	0.02
Teacher Effectiveness<-- Coping Response	0.24***	0.07	0.49***	0.07	0.31***	0.07	0.27***	0.07	0.32***	0.07
Teaching Effectiveness<-- Perceived Control	0.50***	0.05	0.11	0.05	0.14	0.05	0.09	0.05	-0.56	0.05

***p<.001

Table 11
Model Fit Summaries of Post-Hoc Model of Teacher Effectiveness for Gender, Age, Education, and Experience

Model	Chi-square	P	CMIN/DF	GFI	AGFI	CFI	RMSEA
Hypothesized Model	273.40	0.00	18.23	0.92	0.86	0.53	0.14
Post Hoc Model	3.63	0.31	1.21	1.00	0.99	1.00	0.02
Post Hoc Model for Gender	6.47	0.37	1.08	1.00	0.99	1.00	0.01
Post Hoc Model for Age	17.23	0.14	1.44	0.99	0.96	0.98	0.02
Post Hoc Model for Education	18.05	0.11	1.50	0.99	0.96	0.97	0.03
Post Hoc Model for Experience	25.92	0.04	1.21	1.00	0.99	1.00	0.04
Post Hoc Model for Experience*	17.90	0.14	1.49	0.99	0.96	0.98	0.02

*Suppressing two paths to “coping response” variable.

Adapting model to fit for teacher experience level:
By constraining all parameters to be equal then freeing parameters, it was determined that the two paths leading to coping response were determined to be non-invariant; once these paths were suppressed the model achieved an acceptable fit.

The post-hoc model fit the data of all of the demographic subgroups with the exception of teacher experience, which had a chi-square value of 25.92 and a significance level of .04, below the desired p>.05. Further analysis indicated that the post-hoc model fit the data for teacher experience when the two paths leading to teacher coping response were suppressed (control-->coping response and achievement emotions-->coping response).

Summary of Results

The results of this study did not support the hypothesized path model of teacher effectiveness. Two factors which were hypothesized to predict teacher achievement emotions—teacher's attribution of responsibility for student achievement, and teacher's values as they relate to educational reform—were found to have no significant impact on emotions that teachers experience in the classroom. The removal of these two variables in the post hoc model improved the model's fit of the data. The addition of three direct paths from the variable control to the model's remaining variables (student achievement, coping response, and teacher effectiveness) also substantially improved the path model and resulted in a model that represented the data robustly.

Although only a modest effect was established, the results of this study indicate that a teacher's coping response *does* serve as a mediating factor between a teacher's emotions and his or her effectiveness in the classroom.

In this study, the most significant factor in predicting teacher effectiveness was teachers' perceived level of control. A teacher's sense of control was most strongly related to teacher effectiveness. The more effective a teacher felt in planning and

facilitating learning activities to attain given educational goals, the more likely he or she was to incorporate effective teaching strategies with students. In addition, the more efficacious teachers felt in the classroom, the more likely they were to rate their students' academic performance at a higher level. Higher levels of self-efficacy in teachers also contributed significantly to the likelihood that teachers would experience positive achievement emotions in the classroom.

The post hoc path model of teacher effectiveness proved to be a good fit between the data of the study's different groups, with the exception of those groups determined by experience levels. When the two paths leading to the variable coping response were suppressed the model achieved an acceptable fit to the data for this subgroup. A brief summary of the hypotheses of the study and the main results are presented in Table 12 on the following page (See page 106).

Table 12
Brief summary of hypotheses and main results.

Hypotheses	Results
A teacher's perceived level of control over student achievement will be significantly related to their achievement emotions and effectiveness in the classroom.	Teachers' perceived control over student achievement was significantly and directly related to teachers' achievement emotions, as demonstrated by a strong, negative relationship between teachers' sense of efficacy and anxiety and anger while teaching. Teacher's sense of self-efficacy was strongly and positively related to teacher effectiveness in the classroom. This relationship between teachers' sense of self-efficacy and effectiveness in the classroom was stronger than that between teacher efficacy and achievement emotions.
The congruency between a teacher's value system and that of current educational reforms will be significantly related to their achievement emotions and effectiveness in the classroom.	Path analysis indicated the congruency between a teachers' value system and educational reforms was not significantly related to teachers' achievement emotions, and subsequently a significant path did not exist between a teacher's value system congruency and teacher effectiveness.
A teacher's coping response will be a significant mediating effect between a teacher's achievement emotions and their effectiveness in the classroom.	A non-significant, negative relationship existed between teachers' achievement emotions and their coping response. However a moderate, positive relationship, which was significant in nature, existed between teachers' emotions and their effectiveness in the classroom.
There is a significant linear and directional relationship between a teacher's perceived control over student achievement, the congruency between the teacher's values and educational reforms, the teacher's achievement emotions and subsequent coping response, and, ultimately, his or her effectiveness in facilitating student achievement in the classroom.	A significant model linking each of these factors was not established using the study's data. However, a path model that fit the data was found that established a linear, directional relationship between teachers' perceived control over student achievement, teachers' emotions and coping response, and teacher effectiveness.

Chapter 5: Discussion

Two of the four hypotheses put forth in this study were supported by the data, a third hypothesis was partially supported, and a fourth was unsupported. Substantiating the study's first hypothesis, teachers' perceived level of control over student achievement was strongly related to both teachers' achievement emotions and their effectiveness in the classroom. The study's second hypothesis was not fully supported by the data. The congruency between a teacher's value system and that of current educational reforms was not significantly related to teachers' achievement emotions and subsequent effectiveness in the classroom. The third hypothesis was corroborated by the study's data; a teacher's coping response did serve as a modest, mediating effect between the achievement emotions teachers experience in the classroom and their effectiveness in facilitating student learning. Lastly, the study's fourth hypothesis was not supported by the data; a significant linear and directional relationship between hypothesized factors contributing to teacher achievement emotions was not established, as two factors (the congruency between the teacher's values and educational reforms and attribution of responsibility for student achievement) were found to be inconsequential. However, a post hoc path model did facilitate a significant, linear and directional relationship between the remaining variables (control, student achievement, achievement emotions, coping response, and teacher effectiveness).

Therefore Pekrun's control-value theory of achievement emotions was not fully supported by this study's findings, as the value component of the theory did not contribute to teachers' achievement emotions as hypothesized. Most likely, the reason for

this is due to this study's re-conceptualization of Pekrun's "value" term. For this study, value was postulated as the correspondence between the teacher's value system and its correlation with current and proposed educational reforms. Whereas Pekrun's definition of "value" was less specific and included: "positive intrinsic values related to the achievement action or activity" and the "subjective importance of achievement outcomes;" (Pekrun, 2006, p. 23). In this study, the correlation between the teacher's value system and educational reforms was pursued in an effort to assess how such correlation impacted teacher emotions. The underlying goal was to ascertain whether teachers' attitudes towards reforms and the correlation between their own value systems impacted their feelings in the classroom, specifically, whether teaching under such structure impacted the emotions teachers experienced.

Attribution was not a significant factor in predicting teachers' achievement emotions either. Despite the large majority of teachers in this study who attributed responsibility for student achievement to other factors outside of themselves, attribution was not a significant predictor of their emotions in the classroom. Therefore, it appears from these results, that teachers do not let their belief that factors beyond the classroom impact children's learning negatively impact their emotions, or subsequently influence their effectiveness in the classroom.

In his research of teacher burnout, Hochschild (1983) refers to such containment of feelings as emotional labour, the professional requirement of teachers to induce or suppress feelings in order to sustain the outward appearance that produces the "proper state of mind in others" (Hochschild quoted in Hargreaves, 1998, p.7). Hochschild (1983)

found that there is a high cost to such emotional labor, as it contributes significantly to teacher burnout and emotional exhaustion. Schupback (2010) facilitated a longitudinal study of 103 teachers and found that those teachers who experienced emotional labor and withheld their feelings experienced higher levels of emotional exhaustion, which contributed to negative health issues for teachers. Teachers who did not censor their feelings, according to Schupback's (2010) investigation, were healthier than their peers who participated in emotional labor and suppressed such feelings, "Teachers who were able to influence their emotions to feel the emotion appropriate in a situation (so called deep acting) felt significantly less emotionally exhausted after 1 year" (p. 494).

Reviewing the literature on teachers' emotional labor and its relation to high-stakes accountability policy, Steinberg (2008) discusses the "emotional practice" that teachers invoke when they are required to participate in high-stakes testing. Such testing, according to Steinberg (2008) is laden with emotions, which are interwoven with their beliefs. Steinberg (2008) delineates three themes in the literature as they relate to the emotional labor that is catalyzed with teachers under such accountability measures (p. 42): first, "assessment decisions are not "neutral" but involve teachers' emotions; second, "standardized assessment generates intensely negative emotions in teachers which limit their effectiveness, while accountability practices can evoke undesirable emotions which undermine the purposes of schooling;" and, third, "assessment and accountability through standardized assessment are governed by conflicting emotional rules, which inevitably generate confusion in practice."

In a qualitative study involving teacher interviews, Kelchterman (2005) discusses the emotional impact of educational reform agendas and how such emotions are mediated within teachers by a professional context, “Emotions reflect the fact that deeply held beliefs on good education are part of teachers’ self-understanding. Reform agendas that impose different normative beliefs may not only trigger intense feelings, but also elicit micropolitical actions of resistance or proactive attempts to influence and change one’s working conditions” (p. 995). Kelchterman (2005) describes how the emotional labor of teachers is mediated by the professional context in which the teacher practices; this context forces teachers to censor their emotional response to such measures, which inevitably results in emotional issues for teachers whose value system is juxtaposed to such policies.

Thus, although the results of this current analysis indicate that teachers feel that students and their families are responsible for the level of academic achievement the student attains, one could argue that teachers exercise emotional labor that allows them to restrain the feelings associated with being held solely accountable for student achievement Therefore teachers are able to suppress their emotions and values in the classroom and not allow them to impact their teaching. As discussed in the research, however, such emotional labor can have a high price tag on the emotions and physical well being of teachers.

In contrast to the insignificance of the value and attribution variables, control was a very significant factor in predicting teacher achievement emotions and teacher effectiveness. The study’s post hoc path model was considerably enhanced by creating

additional paths from teachers' perceived control to two other model variables: coping response and teacher effectiveness. By connecting teacher's perceived control to all of the post hoc model's variables, the model demonstrated very significant paths and achieved exceptional goodness of fit with the study's data.

The results of this study indicate that teachers who perceive having higher levels of control over student achievement also have higher perceptions of their students' academic achievement (ability, motivation, and discipline). In addition, teachers' anxiety and anger were negatively correlated with perceived student performance levels, meaning teachers experienced higher levels of anxiety and anger when working with lower performing students; whereas teachers who worked with higher achieving students experienced more positive achievement emotions such as enjoyment. These findings were corroborated by a study of teachers facilitated by Mulvenson, Stegman, & Ritter (2005). In their research, the authors found that teachers who were required to use standardized assessments had higher levels of anxiety than teachers who were not, and, among those teachers who were required to use assessments, those teachers who were working with low performing students experienced higher levels of anxiety than those teachers working with more capable students. Therefore, Mulvenson, Stegman, & Ritter (2005) concluded that a teacher's level of anxiety while teaching under accountability reforms correlated negatively with student performance. These results corroborate the findings of this study.

Frenzel et al. (2009) also established a significant connection between student achievement levels and the achievement emotions teachers experienced while teaching.

In Frenzel's et al.'s (2009) research study, those teachers who rated their classes as capable, motivated, and disciplined reported less anger and anxiety than their colleagues who rated their classes as less capable, motivated, or disciplined. Frenzel et al.'s (2009) findings therefore corroborate the findings of this study and that of Mulvenson, Stegman, & Ritter (2005) in their findings that teachers' achievement emotions are impacted by their students' academic performance, motivation, and discipline.

Perhaps the most significant finding of this study is the robust relationship between teacher's perceived control over student learning and their use of effective teaching strategies. Teachers who believe in their ability to plan for, organize, and foster student achievement experience more positive achievement emotions and implement more effective teaching strategies in the classroom. Conversely, those teachers who perceive having less control over student learning use fewer effective teaching approaches. These results validate the work of Albert Bandura (1993) and his pioneering research on teacher efficacy. First, this research corroborates Bandura's assertion that teachers are more effective when they feel in control, and second, when teachers do not feel in control they experience negative emotions.

Teachers are more effective when they feel in control; when teachers feel efficacious in their teaching their students perform better (Bandura, 1993, Hunt, 2006). In this current analysis, a robust, positive correlation ($.50^{***}$) between teachers' feelings of control and teacher effectiveness was obtained. The data indicated that as teachers felt more in control over the different facets of teaching, they implemented effective teaching strategies more often with their students, such as differentiated instruction based on

student abilities and project based learning. Ultimately teachers who feel more efficacious in their work are more effective in facilitating student achievement. These findings corroborate Frenzel's (2009) research in which the author found that as teachers felt less in control of their teaching, they relied more heavily on less effective teaching strategies (i.e., rote memory tasks) instead of more complex thinking and analytical tasks.

Bandura's (1993) second assertion contends that teachers experience negative emotions when they do not feel in in control, "perceived lack of control can lead to a perceived lack in ability (i.e. efficacy), demoralization, physical and emotional exhaustion, weak commitment to teaching, decreased performance of the teacher, an in turn failure" (Bandura, 1993, as cited in Hunt, 2006, p. 5). This statement was also corroborated by this current study, as well as by Hunt (2006), and Frenzel et al. (2009). In this current study, a teacher's sense of control was significantly, negatively correlated ($-.38^{***}$) with adverse achievement emotions (i.e. anger and anxiety). Frenzel (2009), too, established this connection between teachers' sense of control and the achievement emotions they experienced, specifically, when teachers appraised less control over their teaching, they experienced more negative achievement emotions.

Hunt (2006) examined data from a nationally representative sample of teachers (n=39,832) who completed *The School and Staffing Survey*. Hunt's (2006) analysis examined teachers' perceived levels of control over curriculum and instruction. Hunt (2006) established that teachers' sense of control was improved by the enhancement of teachers' sense of community, specifically with increased trust and collegiality amongst teaching staff members. Conversely, teachers who did not experience feelings of trust and

affinity expressed diminished perceptions of efficacy. Hunt's (2006) study confirms the connection between teachers' feelings and emotions and their sense of control in teaching.

Also in this current study, teachers who perceived having greater control over facilitating student learning also incorporated more adaptive coping skills when presented with stressful situations, as indicated by the significant, positive correlation ($.21^{***}$) between teachers' sense of control and their implementation of adaptive coping skills. These results indicate that as a teacher's sense of control increases, he or she is more likely to implement adaptive coping strategies when experiencing negative emotions such as anger or anxiety. This is a substantial finding because of the significant, positive path that connects coping to teacher effectiveness ($.24^{***}$). One can assert, therefore, if a teacher's sense of control can be enhanced, the teacher may be more likely to incorporate more adaptive coping skills, and, subsequently implement more effective teaching strategies. The positive correlation between a teacher's sense of control and their particular coping response established in this study was also established by the researchers Chwalisz, Altmaier, & Russell (1992) who found that teachers who had higher self-efficacy implemented more problem-focused coping when responding to stressors.

A teacher's desire to feel in control of his or her teaching can be in conflict with current educational trends, specifically under federal policy emphasizing teacher accountability. This is particularly problematic because, as the result of this and other research studies indicate, there is a significant, positive correlation between a teacher's need to feel in control, their implementation of effective teaching strategies, and student

achievement. In a review of longitudinal data spanning from 1993 through 2008, Sparks (2012) examined the level of control and autonomy teachers perceived having over the different facets of their teaching. Beginning with the implementation of *No Child Left Behind* legislation in 2003, Sparks found that teachers perceived having less autonomy. More specifically, Sparks (2012) established that teachers in elementary schools and teachers who taught subjects that were tested perceived even less control over their teaching.

Implications

The findings of this study have implications for high stake accountability reforms currently in use across the United States. Current educational reforms under *No Child Left Behind* and high stakes accountability policies can impact teachers' perceived level of control over what they teach and how they teach it. As discussed in Chapter 2, schools labeled as "failing" receive intense intervention from the federal government, and subsequently lose more control with each academic year that it is considered "failing." According to the findings of this study, by removing teachers' sense of control such intercession policies may be reinforcing student and teacher failure rather than ameliorating it, and in fact promoting a vicious cycle.

The potentially damaging effects of this policy are two-fold. First, students in failing schools are subjected to curricula that emphasize basic skills, deemphasize important learning skills such as critical thinking, and provide less opportunity for teachers "to connect classroom activities to students' own lives, interests and culture,"

which is a student-centered learning approach that enhance student achievement (Hursch, 2007, p. 298). Second, the imposition of external control in failing schools displaces the teacher sense of control over facilitating student learning, circumstances that, according to this study's findings, catalyze teachers to experience more negative achievement emotions while teaching, and consequently implement fewer effective teaching strategies, and ultimately, negatively impacting student achievement. Therefore, a failing school, which is deemed by its categorization as ineffective, is theoretically made less effective through the diminishing control allotted to the classroom teacher, and to the imposition of less effective teaching strategies.

Similar findings were noted in a study by Berryhill, Linney, & Fromewick (2009) which found that when teachers were required to implement certain teaching materials over others, and/or to focus their attentions on specific students over other students, and such external emphasis ran counter to their own professional judgment, teachers were more likely to experience negative achievement emotions (internal conflict, aggravation, and, in due course, emotional fatigue).

Furthermore, the negative effects of federal intervention in failing schools may be exacerbated in at-risk schools that have been categorized as failing for a number of consecutive years, as more interventions are imposed and more control is lost by the school and the teacher as with each failing year. By limiting teacher's sense of efficacy in the classroom, the findings of this study give some credence to Hursch's (2007) assertion that NCLB exacerbates inequality. High stakes accountability measures may be

inadvertently contributing to the widening of this gap by imposing interventions on at-risk schools that are counterproductive, as has been discussed here.

High Stakes Accountability and the Co-production of Education Services

Based on this study's findings, using the theoretical lens of co-production served as an effective and meaningful approach for evaluating the impact of high stakes accountability on teacher effectiveness First, this paradigm focuses attention on the core of the co-production of education services, specifically, that exchange which occurs at the teacher-student nexus. Focusing on this seemingly rudimentary interdependence underscores the direct impact accountability reforms can have on this co-production function. Reforms intended to enhance this function must consider how such proposals will impact the achievement emotions of both the teacher and the student, and subsequently how such achievement emotions will impact teaching and learning at its most fundamental and significant level. As shown in this study, reform that removes control away from the classroom teacher creates negative achievement emotions and results in less effective teaching.

Second, the co-production model served to broaden the scope of examining student achievement under high stakes accountability measures to include not only the teacher's role in facilitating learning in the classroom, but also the student's role and that of his or her family and/or support network. This broadening of scope allows for an examination of the major influences impacting student learning and performance, and does not limit such investigation to only one factor, the teacher. As discussed in Chapter 2, the student side of the teacher-student nexus, specifically the students' readiness to

enter school, is greatly influenced by other factors prior to entering school, and such factors are largely driven by children's socioeconomic level and ethnicity. The current accountability movement in the U.S. places full burden for student achievement on the classroom teacher, despite the complex social and familial challenges that impact the teacher-student nexus, factors that are outside of a teacher's control. Therefore, because of the influences of contingent inputs from outside the student-teacher nexus, the co-production of education services may be very different at the teacher-student nexus based on student socioeconomic level and ethnicity. This hypothesized connection between the student side of the student-teacher nexus and the student's socio-economic status presents a thought-provoking opportunity for future study.

As discussed in Chapter 2, children from low-income homes are exposed far less to cognitively stimulating activities, language, and literacy activities compared to children from more affluent families. More affluent parents also invest more money per child than those from low-income families into stimulating activities, and such investment correlates to higher academic achievement. This large disparity has a profound impact on the achievement level with which children begin school, with children from low-income families starting school already far behind other children from wealthier families, a gap that does not narrow as students progress through school (Reardon, 2011, p. 1). Therefore teachers working in low-income schools are challenged to raise student achievement levels to the same levels of those students who do *not* begin school with the same, significant academic deficits. Provided the data of this current study, this may be a lofty goal given the significant path coefficients leading from

teachers' sense of control and the perceived level of achievement of their students' to negative achievement emotions (-.38*** and -.30*** respectively). Teachers in this situation, those who feel less control over their teaching (due to the fact they are working in a low performing school and may be required to teach from certain curricula or use certain teaching strategies) and perceive their students as low achieving (due to lower socio-economic status of community in which the school is located) are more likely to experience anxiety and anger. Without the protective mediating effect of a healthy coping response, these teachers will be less effective in the classroom due to their implementation of less effective teaching strategies.

Study Limitations

This study has a number of limitations. First, revisions to a number of the original survey tools, as discussed in Chapter 3, may limit their comparability in the literature to those survey results in which the original formatting was retained. Second, because the sampling method implemented in this study was a convenience sample of Alaskan teachers, its findings may not be generalizable to the larger population of teachers in the state or the U.S. Third, the representativeness of the sample was unable to be assessed because school districts requested that their participation in the study remain anonymous. Therefore the findings of this study have limited generalizability. Finally, the results of this study are correlative; therefore, causal relationship amongst the variables cannot be determined. Because of these limitations, the findings of this study should be interpreted judiciously.

Recommendations

Punitive reforms that result in greater levels of government intervention may be more damaging than helpful. Instead of a punitive model of reform, school districts and states would be better served by advancing reforms that serve to foster teachers' sense of efficacy in the classroom (i.e., meaningful professional development, evaluations that are intended to improve teaching delivery, mentoring, and pertinent training and support). As teachers feel more in control in the classroom they experience more positive achievement emotions while they teach. These positive emotions contribute to teachers feeling more in control, and more at ease to implement pedagogical strategies that encourage student learning. School leaders who want to improve student learning and achievement need to create school environments in which teachers' sense of efficacy is fostered and reinforced.

Using the co-production model to emphasize the codependent relationship that is required for student learning (the relationship between the teacher and the student), educational policy can be made more effective by addressing all components of the co-production of education services, not only that of the teacher. The recent surge of punitive accountability measures in educational policy overemphasizes the teacher side of the co-production model and neglects thoughtful examination on how to enhance both the student's contribution as well as to improve the contingent inputs of student support systems (family).

By not better addressing the student side of the co-production model, policy makers may struggle to design and implement effective reform in public education. Without such reform, the current trends in student achievement predict a society in which

children born into families of low socioeconomic status will become further and further behind their wealthier, same-age peers, which in turn will contribute to less education attainment and lower income, contributing to yet another vicious cycle in the U.S. Reardon (2011) summarizes this trajectory, “As the children of the rich do better in school, and those who do better in school are more likely to become rich, we risk producing an even more unequal and economically polarized society” (p. 27).

Phillips (2011) and Heckman (2011) advocate for pre-school programs for families of lower socioeconomic status, as well as educating parents on the importance of reading to children, engaging children in thoughtful communication, and exposing young children to novel experiences and high quality adult-child interactions (Heckman, 2011; Phillips, 2011). Heckman (2011) underscores the need for high quality preschools by indicating their power to reverse a number of the negative consequences that accompany children’s lives who are disadvantaged:

> Adverse impacts of genetic, parental, and environmental resources can be overturned through investments in quality early childhood education that provide children and their parents with resources they need to properly develop the cognitive and personality skills that create productivity” (p. 32).

In sum, the co-production of education services in the U.S. can be improved by replacing punitive, high stakes accountability policies with professional development that increases teachers’ sense of efficacy in the classroom, and that provides a free and appropriate public education to disadvantaged children at an earlier age. These two

recommendations offer feasible solutions to enhancing the co-production of education services and to ameliorating a very complicated social issue.

Suggestions for Further Research

Researching the economic feasibility of extending education to American children living in poverty is a worthwhile pursuit. A cost-benefit analysis of extending public education to the pre-school aged child would need to consider how such expenditures would offset current budgetary items that are not effective under the current high-stakes accountability movement, including federal funds used to enforce NCLB legislature (i.e. enforcing AYP school sanctions). Research into the current costs associated with teacher stress and its repercussions on productivity and effectiveness in the classroom would help paint a more accurate cost-benefit model, which at first glance may appear to be grossly cost laden. Increased productivity by students under the new model and its implications for enhancing student retention are two other factors that research could provide valuable data. Lastly, with the predicted gains in student achievement that would accompany disadvantaged children starting school at an earlier age, long-term enhancements such as increased graduation rates and college preparedness, should be evaluated as prospective long-term benefits.

Continued research into enhancing teachers' sense of efficacy is imperative as well. Teacher preparation programs, teacher mentor programs for new teachers, enhancing teacher collegiality, and strengthening parent-teacher relationships are areas of research indicating potential contributions to teachers' sense of efficacy. As discussed previously in this section, the research of Hunt (2006) indicates that teachers' efficacy is

positively correlated with teacher' feelings of collegiality and trust. Skaalvik & Skaalvik (2010) found that teacher self-efficacy was most strongly related to teachers' relationships with their students' parents. Group efficacy offers another area of research worth exploring; does a teaching staff with a higher level of group efficacy enhance individual teachers' sense of efficacy? How does group efficacy impact school-wide student achievement? Do schools with higher levels of group efficacy outperform schools with lower levels of group efficacy?

Lastly, achievement emotions matter; teachers who experience more positive emotions in the classroom implement more effective strategies with their students. Further research on how to enhance positive teacher emotions is crucial for increasing student achievement. More research is needed into how to foster positive achievement emotions in teachers, especially in those schools labeled as "failing," or those with a high proportion of at-risk students. As discussed here, the co-production of education services has more challenges in at-risk schools due to lower student achievement and diminished contributions from outside the teacher-student nexus. Therefore, rather than negatively labeling such schools and removing control from teachers in these circumstances, policy makers and education pundits must research ways to empower these teachers and train them to be more efficacious in the classroom. As teachers begin to feel more in control of their teaching, they are more likely to experience positive achievement emotions, and consequently, more likely to implement more effective teaching strategies. The result? Enhanced student achievement.

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Appendix A:

Tables A.1 – A.8

Table A.1
Reliability of Scales and Subscales

Scales & Subscales	Items	Mean	SD	alpha
Teacher Sense of Efficacy Scale	24	3.15	0.46	.92
Student Engagement	8	2.91	0.51	.84
Instructional Strategies	8	3.23	0.45	.82
Classroom Management	8	3.31	0.42	.86
The Teacher Questionnaire of Values and Attitude Towards Educational Reforms	42	2.35	0.61	.81
Attitude Towards NCLB	16	2.27	0.59	.92
(Attitude Towards SBAs)	7	2.80	0.52	(.26)
Attitude Towards SBAs–Less 2 Variables*	5	3.12	0.53	(.67)
Attitude Towards Merit Pay	8	2.30	0.80	.87
Internal/External Factors & Attitude	11	2.18	0.55	.71
CDSII & Vignettes: Self Attribution	26	5.23	2.50	.88
Locus of Causality	8	5.22	2.23	.83
Locus of Personal Control	8	5.55	2.04	.80
Locus of External Control	8	4.93	2.01	.76
Locus of Stability	8	3.69	2.60	.79
CDSII & Vignettes: "Other" Attribution	26	5.11	2.78	.79
Locus of Causality	8	5.43	2.61	(.67)
Locus of Personal Control	8	5.42	2.60	.73
Locus of External Control	8	4.29	2.67	.79
Locus of Stability	8	3.78	2.90	(.64)
The Assessment of Teacher Enjoyment, Anxiety, and Anger Related to Teaching	12	2.19	0.54	(.48)
*The Assessment of Teacher Enjoyment, Anxiety, and Anger Related to Teaching***	8	1.68	0.58	.86
Perception of Student Achievement	3	2.00	1.70	.79
Enjoyment Subscale	4	3.22	0.47	.83
Anger Subscale	4	1.54	0.52	.82
Anxiety Subscale	4	1.81	0.64	.75
The Brief Cope Scale	19	2.51	0.57	.73
Adaptive Coping Subscale	13	2.97	0.64	.76
Maladaptive Coping Subscale	6	1.52	0.43	(.57)
The Teaching and Learning International Survey (TALIS) Teacher Questionnaire	11	2.47	0.65	.75
Structure Subscale	3	2.99	0.66	(.59)
Student Orientation Subscale	4	2.58	0.64	(.66)
Enhanced Student Activities Subscale	4	1.97	0.64	.70

*SBA Subscale with two question items removed.
**Removed Enjoyment Subscale questions.

Table A.2
Correlations Between Scales, Subscales, and Demographic Data

Scale/Subscale	Gender	Age	Experience	Education
Teachers' Sense of Efficacy Scale	.00	.16**	.24**	.13**
Student Engagement Subscale	.03	.12**	.14**	.06
Instructional Strategies Subscale	-.02	.18**	.26**	.15**
Classroom Management Subscale	-.04	.13**	.24**	.13**
Teacher Questionnaire of Values & Attitude	-.04	-.13**	-.19**	-.11**
NCLB Subscale	.02	-.04	-.06	-.07*
SBA Subscale+	.01	-.01	-.02	.06
Merit Pay Subscale	-.09**	-.16**	-.25**	-.11**
Factors Influencing Attitude Subscale	.01	-.04	-.01	-.03
Vignettes-Self Attribution	-.01	-.01	-.01	-.02
Locus of Causality Subscale	-.08	.10	.06	.05
Locus of Personal Control Subscale	-.07*	.00	.00	-.01
Locus of External Control Subscale	-.03	-.04	.01	.01
Locus of Stability Subscale	-.07	.03	-.08	.06
	.00	-.02	.02	.02
Vignettes-"Other" Attribution				
Locus of Causality Subscale	.01	-.01	.04	.02
Locus of Personal Control Subscale	-.03	.00	.04	.03
Locus of External Control Subscale	.01	-.03	-.00	.01
Locus of Stability Subscale	.04	-.03	-.00	.01
Assessment of Teacher Enjoyment, Anxiety, and Anger Related To Teaching++	-.02	-.11**	-.17**	-.09**
Anger Subscale	-.05	-.12**	-.14**	-.08*
Anxiety Subscale	.01	-.08*	-.18**	-.09**
Teacher rating of student achievement	-.05	.08*	.07*	.01
The Brief Cope +++	.16**	.06	.04	.06
Adaptive Coping Subscale	.17**	.10**	.08*	.06
	.02	.04	.08*	.08*
TALIS+++				
Enhanced Student Activities Subscale	-.05	.01	.01	.05
Student Orientation Subscale	.10**	-.04	.01	.02

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).
+SBAs less two questions
++Removed enjoyment subscale
+++Removed maladaptive scale
++++Removed structure subscale

Table A.3
The Teachers' Sense of Efficacy Scale: Scale Items, Mean Response Scores, Standard Deviations, Correlations with Demographic Variables

Scale Item	Mean	SD	Gender	Age	Education	Experience
Provide challenges for very capable students.	3.05	.74	-.09	.07	.07	.12*
Keep problem students from ruining lesson.	3.14	.72	.08	.09*	.08**	.17**
Craft good questions.	3.29	.63	.11	.10*	.09	.12*
Make expectations clear about behavior.	3.64	.53	.13	.10**	.14**	.19**
Get through to most difficult students.	2.82	.72	.07	.07	.04	.08*
Help students think critically.	3.07	.67	.09*	.09	.11	.10
Motivate students show low interest.	2.71	.76	.07	.09	.10	.09*
Foster student creativity.	3.03	.75	.05	.07	.06	.07
Control disruptive behavior.	3.27	.69	-.09*	.09	.16	.10**
Get students to believe they can do well.	3.20	.65	.10	.11*	.07	.16
Establish classroom management system.	3.41	.63	.19	.21	.09	.14**
Help students value learning.	3.01	.70	.08	.10	.10	.10
Respond to defiant students.	3.01	.73	.12	.12	.09	.11*
Respond to difficult questions from students.	3.34	.62	-.09	.08**	.09	.17**
Establish routines.	3.54	.56	.08	.16	.071	**
Gauge student comprehension of what was taught.	3.26	.58	.08	.09*	.09	.18**
Improve the understanding of failing student.	2.87	.68	.11	.10	.14	.16**
Adjust lessons to proper level for students.	3.11	.75	.12	.13*	.10	.18**
Calm disruptive student.	3.10	.69	.12*	.13*	.07	.17**
Use a variety of assessment strategies.	3.20	.73	.13	.15**	.11*	.18**
Provide an alternative explanation.	3.41	.60	.14	.15**	.14**	.22
Assist families in helping children do well.	2.63	.78	.08	.05	.06	.06
Get children to follow rules.	3.32	.63	.10	.16**	.09	.21**
Implement alternative strategies in classroom.	3.16	.68	.19	.20**	.13	,21**

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

*. Correlation is significant at the 0.05 level (2-tailed).

Table A.4
Teachers' Values & Attitudes Towards Educational Reforms: Scale Items, Mean Scores, Standard Deviations, Correlations with Demographic Variables

Scale Item	Mean	SD	Gender	Age	Education	Experience
Providing enriched educational program.	2.26	0.78	-.02	-.04	-.02	-.07
Meeting needs of low achieving students.	2.42	0.77	-.02	-.03	.00	-.05
Affording parents opportunity to participate.	2.40	0.74	-.09*	-.09	-.07	-.08
Providing accelerated educational program.	2.18	0.79	-.04	-.05**	-.10	-.08**
Facilitating challenging academic content.	2.38	0.79	-.01	-.09**	-.09	-.10*
Turning around low-performing schools.	2.25	0.73	.01	.03	.00	.02
Providing low schools better learning opportunities.	2.36	0.75	.05	.07	.04	-.08
Holding schools accountable.	2.73	0.74	.11**	.10	.09	.09
Allocating resources to neediest schools.	2.20	0.75	.07	.09	.08	.06
Providing greater decision-making to teachers.	1.83	0.80	.01	.00	.03	-.07
Closing the gap between high- and low-performing students.	2.13	0.73	-.01	.00	.01	.04
Exposing students to effective instructional strategies.	2.52	0.78	.12	.09	.10	.08
Closing gap between advantaged and disadvantaged students.	2.09	0.73	.05	.00	.03	.02
Elevating teacher quality via professional development.	2.33	0.82	.10	.09**	-.12	-.11

Scale Item	Mean	SD	Gender	Age	Education	Experience
Holding teachers accountable.	2.67	0.79	.09**	.10	.09	.08
Providing students with scientific-based instruction.	2.54	0.76	-.02	-.02	.00	-.03
A reliable indicator of student achievement.	2.25	0.71	-.03	-.06	-.05	-.04
Hindering the educational process in Alaska.	2.66	0.78	.01	.00	.01	.04*
A valid indicator of teacher effectiveness.	1.73	0.68	-.02	-.09	.10	.11
Problematic in how they are urrently used by districts.	2.89	0.73	-.02	-.03	.00	-.02
Other sources should be used to gauge achievement.	3.55	0.67	.03	.04	.10**	.06
Encourages teachers to teach to the test.	3.24	0.73	-.01	.07	.13*	.09
Creates stress for the classroom teacher.	3.29	0.73	.06	.06	.10**	.11
Works harder, puts in more time and effort than others.	2.38	0.99	-.04	-.14	-.11	-.21
Students score higher on standardized tests.	1.79	0.77	-.09*	-.07	-.07	-.11
Achieve National Certification.	2.62	0.95	-.031	-.15	-.11	-.21
Specialize in hard-to-fill subjects.	2.22	0.90	-.15**	-.11	-.15	-.17
Improve students' math and reading skills.	2.39	0.95	-.07	-.13	-.12	-.21
Teach hard-to-reach students.	2.49	0.94	-.09*	-.08*	-.10	-.17
Consistently receive outstanding evaluations.	2.33	0.96	-.00	-.13	-.10	-.20
Work in low performing schools.	2.34	0.87	-.06*	-.08*	-.09	-.13

Scale Item	Mean	SD	Gender	Age	Education	Experience
My philosophical beliefs as a teacher.	3.62	0.60	-.01	.12*	.09	.11*
Opinions of my closest colleagues at school.	2.50	0.78	-.01	.14*	.13	.15
My experience as a teacher.	3.77	0.49	-.03	-.09*	-.07	-.16**
The media (newspaper, t.v.).	1.93	0.69	.05	.11	.08	.15**
My personal value system.	3.65	0.56	-.02	-.04	-.04	-.05
Generally held attitudes of my colleagues at school.	2.39	0.74	.16	.08	.05	.07
My understanding of the reforms.	3.36	0.65	.14	.08	.11	.10
What I learned in my Education course work.	2.52	0.90	-.04	.11	.09	.12**
My principal's opinion of school reforms.	2.13	0.86	.04	.16	.08	.11
How involved I have been in the reform process.	2.66	0.91	.03	-.09	-.08	-.08
My school's history with school reform.	2.51	0.87	.01	-.09	-.11	-.09

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

*. Correlation is significant at the 0.05 level (2-tailed).

Table A.5
Teachers' Subjective Appraisal of Student Performance Subscales: Items, Mean Scores, Standard Deviations, Correlations with Demographic Variables

Scale Item	Mean	SD	Gender	Age	Education	Experience
Rating of class's academic performance	1.90	0.65	.18**	.09*	.12	.14*
Rating of class's academic motivation	2.07	0.69	.15	.14*	.08	.10*
Rating of class's academic discipline	2.03	0.69	.16	.11	.14	.09

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

*. Correlation is significant at the 0.05 level (2-tailed).

Table A.6
Assessment of Teacher Enjoyment, Anxiety, and Anger Related To Teaching: Scale Items, Mean Scores, Standard Deviations, Correlations with Demographic Variables

Scale Item	Mean	SD	Gender	Age	Education	Experience
I was worried when I thought about teaching this class.	2.02	.85	.10	.06	.05	.05**
I felt angry when teaching this class.	1.32	.58	.09	.11**	.08	.10
I felt nervous when I taught this class	1.56	.74	.08*	.12	.11	.09*
I was worried that my teaching was not going well.	2.02	.82	.12	.10	.07	.06**
I became mad while teaching this class.	1.41	.68	.03	.00	.01	.03
I felt distressed when preparing for the class.	1.66	.78	.13**	.11	.06	·08**
I was annoyed when I taught the class.	1.67	.77	.10**	.13**	.12	.09**
I was really frustrated while teaching this class.	1.78	.84	.11	.05	.18	.13

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

*. Correlation is significant at the 0.05 level (2-tailed).

Table A.7
The Brief Cope Scale: Scale Items, Mean Scores, Standard Deviations, Correlations with Demographic Variables

Scale Item	Mean	SD	Gender	Age	Education	Experience
Concentrate efforts on doing something about problem.	3.37	0.64	.14*	.11**	.10	.07
Work hard to make situation better.	3.49	0.60	.05**	.14**	.09	.12
Plan what to do about problem.	3.46	0.62	.03	.16*	.11	.07
Think of best way to deal with problem.	3.55	0.56	.10**	.09*	.06	.06
Focus on dealing with the problem.	2.77	0.81	.04*	.00	.02	.00
Keep self from getting distracted.	2.72	0.77	.11	.09	.10	.08
Ask someone for advice.	3.03	0.77	.12**	.11**	.09	.10
Talk to someone.	3.07	0.80	.14	.04*	.06	.05
Look at things positively.	3.4	0.65	.02	.07**	.05	.09
Live with problems.	2.54	0.80	.11*	.08*	.06	.00
Get used to the idea.	2.43	0.77	.08	.11	.10	.10
Find comfort in religion/spiritual beliefs.	2.4	1.14	.00	.02*	.00	.03
Pray.	2.32	1.18	.02*	.00	.10	.09
Refuse to believe it has happened.	1.17	0.51	.12	.08	.15	.12
Give up.	1.21	0.50	.03	.00	.01	.00
Stay busy.	1.73	0.70	.01	.02	.06	.08
Watch TV.	1.84	0.77	.00	.04	.03	.00
Make fun of situation.	1.82	0.77	.02	.08	.05	.04

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

*. Correlation is significant at the 0.05 level (2-tailed).

Table A.8
The Teaching and Learning International (TALIS) Survey: Scale Items, Mean Scores, Standard Deviations, Correlations with Demographic Variables

Scale Item	Mean	SD	Gender	Age	Education	Experience
I explicitly state learning goals.	3.18	.75	.06	.11	.13**	.12**
I review with the students the homework they prepared.	2.97	.90	.14	.10	.10*	.08*
Students work in small groups to come up with a joint solution to a problem.	2.79	.73	.05	.06	.04	.12
I give different work to the students who have difficulties learning and/or to those who can advance faster.	2.85	.83	.13*	.07	.03	.10**
I ask my students to suggest or to help plan classroom activities or topics.	2.40	.76	.09	.14**	.07	.10
At the beginning of the lesson I present a short summary of the previous lesson.	2.82	.79	.02	.08	.11	.12
Students work on projects that require at least one week to complete.	2.28	.83	.17	.10	.08	.16
Students work in groups based upon their abilities.	2.28	.87	.10	.06	.11	.02*
Students make a product that will be used by someone else.	1.77	.69	.08	.07*	.11	.07*
I ask my students to write an essay in which they are expected to explain their thinking or reasoning at some length.	2.02	.89	.11	.08	.10*	.10
Students debate and/or argue for a particular point of view that may not be their own.	1.81	.76	.14*	.08*	.07	.15*

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

*. Correlation is significant at the 0.05 level (2-tailed).

Appendix B:

UAF Institutional Review Board Approval - Original

UNIVERSITY OF ALASKA FAIRBANKS

(907) 474-7800
(907) 474-5444 fax
fyirb@uaf.edu
www.uaf.edu/irb

Institutional Review Board

909 N Koyukuk Dr. Suite 212, P.O. Box 757270, Fairbanks, Alaska 99775-7270

November 1, 2011

To:	Cecile Lardon, Ph.D. Principal Investigator
From:	University of Alaska Fairbanks IRB
Re:	[201969-2] The Impact of Teachers' Achievement Emotions on the Coproduction of Education Services

Thank you for submitting the Revision referenced below. The submission was handled by Exempt Review. The Office of Research Integrity has determined that the proposed research qualifies for exemption from the requirements of 45 CFR 46. This exemption does not waive the researchers' responsibility to adhere to basic ethical principles for the responsible conduct of research and discipline specific professional standards.

Title:	The Impact of Teachers' Achievement Emotions on the Coproduction of Education Services
Received:	October 25, 2011
Exemption Category:	2
Effective Date:	November 1, 2011

This action is included on the November 17, 2011 IRB Agenda.

Prior to making substantive changes to the scope of research, research tools, or personnel involved on the project, please contact the Office of Research Integrity to determine whether or not additional review is required. Additional review is not required for small editorial changes to improve the clarity or readability of the research tools or other documents.

Appendix C:

UAF Institutional Review Board Approval - Current

(907) 474-7800
(907) 474-5444 fax
fyirb@uaf.edu
www.uaf.edu/irb

Institutional Review Board

909 N Koyukuk Dr. Suite 212, P.O. Box 757270, Fairbanks, Alaska 99775-7270

April 15, 2013

To:	Cecile Lardon, Ph.D. Principal Investigator
From:	University of Alaska Fairbanks IRB
Re:	[201969-5] The Impact of Teachers' Achievement Emotions on the Coproduction of Education Services

Thank you for submitting the Progress Report referenced below. The submission was handled by Exempt Review. The Office of Research Integrity has determined that the proposed research qualifies for exemption from the requirements of 45 CFR 46. This exemption does not waive the researchers' responsibility to adhere to basic ethical principles for the responsible conduct of research and discipline specific professional standards.

Title:	The Impact of Teachers' Achievement Emotions on the Coproduction of Education Services
Received:	November 16, 2011
Exemption Category:	2
Effective Date:	January 1, 2013

This action is included on the February 6, 2013 IRB Agenda.

Prior to making substantive changes to the scope of research, research tools, or personnel involved on the project, please contact the Office of Research Integrity to determine whether or not additional review is required. Additional review is not required for small editorial changes to improve the clarity or readability of the research tools or other documents.

Appendix D:

Application to Conduct Research, School District A

[redacted] School District E 6162.8 (d)

Application to Conduct Research

Name of person conducting research:	Kimberly A. Kelly		
Organization:	University of Alaska Fairbanks		
Mailing Address:	104 Rasmussen Road, Fairbanks, Alaska 99712		
E-mail Address:	kkelly2@alaska.edu	**Contact Phone:**	(907) 590-5588
Research Project Title:	The Impact of Teachers' Achievement Emotions on the Coproduction of Education Services		
Goals & Purpose: (use additional pages if necessary)	The purpose of this study is to examine how teachers in Alaska feel about different educational reforms, including the concept of merit pay. Teachers' feelings and emotions towards such reforms and how teachers process their emotions will be examined as a factor in establishing whether these factors impact a teacher's effectiveness in the classroom. It is hypothesized that if teachers are supportive of educational reforms, such as merit pay, they will experience more positive feelings and be more productive teachers compared to their colleagues who do not support proposed educational reforms. It is hypothesized that those teachers who are not supportive of educational reforms will experience more negative emotions, and consequently be less effective in the classroom. Variables inherent to teacher demographics have been found to correlate significantly to acceptance of various educational reforms. For example, research indicates that younger teachers are more receptive to merit pay, i.e. teachers receiving financial incentives for achieving specific goals in student achievement. The data garnered from this study will be compared to published studies on this topic in an effort to discuss how teacher perceptions, attitudes, and emotional response to proposed educational reforms compare to national data.		
Data Collection Activities: (List the types of data collection activities you are proposing. Include copies of any questionnaires, interviews, letters, permission slips, data recording sheets, or other	Online survey (attached).		

instruments you plan to use.)	

Types of Data Collection: For each instrument listed in the previous question, please complete the table below (use additional sheets if necessary).

Type of data collection instrument (written survey for example)	Person(s) receiving the instrument	Time frame for distributing the instrument (month, day)
Online survey	All [redacted] District teachers	November/December 2011

E 6162.8 (e)

Parties Involved: Please complete the table below indicating who will be involved in your proposed data collection activities. Use a separate line of information for each school or grade level or type of person. Use additional sheets if necessary.

School(s) involved	Grade Levels	Type of persons involved (students, teachers, Principals, etc.)	Number of persons involved	Amount of time per person
All	All	Teachers	550	20-30 minutes

Do you plan to obtain parent permission to collect information on student(s) involved in the study? (If yes, please attach sample.)	N/A
Describe who the results will be distributed to and in what format:	Results will be used for Ph.D. dissertation, and may be used in an article for a professional journal or for a professional conference.
Will you need to use school district facilities to complete your research study?	X No
Will you require access to student records: (If yes, please indicate what records you need to access, and why you need to access them.)	X No

Institutional Review Board (IRB) approval from university: letter attached.

[redacted] Benefits: Please describe how this study will benefit the school district.	This study is both relevant and timely to the [redacted] School District, because it will provide the District with significant data regarding how its teachers view current and proposed educational reforms. This information can provide important information as federal and state education agencies consider new ideas for improving student performance and achievement. Implementing change in any organization, be it education or business, requires special consideration as it impacts a district's employees. Research indicates that implementing change can be facilitated with less resistance when employees are supportive of the changes and the concepts behind such changes. The data generated from this online teacher survey will allow the [redacted] to determine the level of receptivity to proposed educational reforms, and in doing ascertain which

	reforms would likely be better received by teachers than other reforms.

If approval is received, I agree to conduct this research study in conformance with BP and E 6162.8. I further agree to provide the school district with a copy of the final report and an executive summary.

Signature of person applying to conduct research — Date: 11/2/11

E 6162.8 (f)

In addition to the completion of this application, the following items must be included in the application packet:

1. Please seek the letters of approval from the principals or program managers before submitting the request. N/A
2. Copies of informed consent forms for teachers, staff, or other adult interviews or questionnaires. N/A
3. Parental permission slips, including informed consent language e.g., voluntary participation, no penalty for not participating, for student interviews and surveys. N/A
4. ✓ Institutional Research Board (IRB) approval from university.

Submit completed packet to the Superintendent.

Approved: ☒ Yes ☐ No [redacted] Signature — Date: 11-2-11

Appendix E:

Application to Conduct Research, School District B

Kim Kelly
104 Rasmussen Road
Fairbanks, AK 99712

Dear Ms. Kelly,

This letter is written to officially inform you that your application to conduct the research project entitled "The Impact of Teachers' Achievement Emotions on the Coproduction of Education Services" in the [redacted]chool District has been reviewed and approved with the modifications listed below. Approval at this stage in no way obligates any staff to participate in the research study. School administrators or staff should not be mentioned as endorsing the research; invitation language may only indicate that permission has been given to seek study participants from within the school district.

Modifications/Clarifications:

1. The invitation to participate in the online teacher survey **must not** come from a district web address or be posted on a district website, in order to avoid any implication of a district mandate. You may use your UAF email address or other non-district address to send out the research invitation.

2. The invitation to participate in the survey must explicitly state that the research is for a UAF student's project, not on behalf of the district, and participation is completely voluntary. The invitation should include the following language, "This survey is part of a research study at the University of Alaska Fairbanks. The [redacted]District has granted the researcher permission to seek voluntary participants for this study. The [redacted]District is neither endorsing nor requiring staff to participate in this research."

3. Teacher email addresses are publicly listed on school websites and may be attained from those public sites. The district does not provide lists of teacher email addresses to external researchers.

4. To avoid negative impact on the response rates of the district's mandatory surveys during the second semester of this school year, the **invitation email must be sent out no later than January 6, 2012.**

5 In order to provide the district with timely data regarding teacher input on educational reform and student assessment, Ms. Kelly will provide the district with participant responses in a raw data file (scrubbed to ensure anonymity if necessary) within two weeks of the survey being closed.

Your signature on the External Research Application confirms that you will follow all regulations governing research projects and surveys as set forth in the administrative regulation that you received with your application. If you have any questions, please call the Research & Accountability Department at [redacted] When your project is complete, please send a copy of the results to the Research & Accountability Department. I wish you good luck with your research and will be very interested in the outcome.

Sincerely,

[redacted]
Executive Director, Alternative Instruction & Accountability

cc: [redacted] Superintendent

Appendix F:

Email Correspondence to Conduct Research, School District C

UNIVERSITY OF ALASKA

Follow up to Teacher Survey with [redacted] Teachers

Kimberly Kelly <kkelly2@alaska.edu> Sun, Feb 26, 2012 at 10:45 PM
To: [redacted]

Hello [redacted]

I want to thank you again for providing me with the opportunity to survey your wonderful teachers, thank you! The return rate was great, especially from the [redacted] teachers, what an awesome group of professionals!

I am now writing up the results of the survey and was wondering if I may have your permission to contact the [redacted] department to ask them the following statistics as they pertain to your district's teachers:

1. Number of male/female teachers.
2. Average age or breakdown of age categories
3. Average Number of years teaching
4. Average education level of teacher (i.e. bachelor's degree, masters degree, etc.)

This information is needed so that I may generalize my findings, and determine whether my sample reflects the larger population. As I mentioned before [redacted] will neither be mentioned nor will the data be disaggregated.

Thank you for your consideration, [redacted]

Kim Kelly, MA, MEd, MA
UAF

Appendix G:

Email Correspondence with School District Principals

Happy New Year (Principal's Name)!

My name is Kim Kelly. I am a teacher with the Fairbanks school district and a graduate student at the University of Alaska. I am currently conducting my dissertation research on how teachers' feelings and perceptions about educational reforms (for example, NCLB and merit pay) impact teaching practices.

I have received permission from your district's Superintendent, (Superintendent's name), to facilitate an online survey with your teachers, so I wanted to let you know that teachers would be receiving an email request regarding this survey on Monday, January 2nd. The survey will be available for 30 days.

I would appreciate it greatly if you could encourage your teachers to share their opinions and feelings on this very important topic. This survey is voluntary and takes approximately 20 minutes to complete. I will be providing incentives to teachers who choose to participate (the opportunity to win an *IPad*, as well as *ITunes* cards to the first 100 teachers who complete the survey).

If you have ANY questions or concerns, please feel free to contact me at the above email address or by phone (907) 590-5588.

Thank you very much, (Principal's Name).

Sincerely,

Kim Kelly, MA, MEd, MA
University of Alaska Fairbanks

Appendix H:

Recruitment Email Sent to Survey Population

January 2, 2012

Dear Educator,

Teachers have had to deal with a lot of changes in recent years.

Your opinion on these changes is very important to this study, which seeks to understand teachers' views of recent educational changes, and how teachers cope with change.

This is a voluntary, confidential survey, and takes approximately 20-30 minutes to complete.

If you are one of the first 100 teachers to complete the survey, you will win a $10 ITunes card, and be entered into the drawing for one of two IPads (*After completing the survey, you will be asked to enter your email address; to ensure anonymity in your responses your email address will be kept completely separate from your survey responses – there will be no link between the email address and the answers you provide.*)

This survey is only available for 4 weeks; please share your important input with this study!

Thank you for your time and input.

Kimberly A. Kelly, MA, MEd, MA
University of Alaska Fairbanks

Appendix I:

Permission to Use Teachers' Sense of Efficacy Scale

College of Education Phone 614-292-3774
29 West Woodruff Avenue www.coe.ohio-state.edu/ahoy FAX 614-292-7900
Columbus, Ohio 43210-1177 Hoy.17@osu.edu

Anita Woolfolk Hoy, Ph.D. Professor
Psychological Studies in Education

Dear Kim Kelly:

You have my permission to use the *Teachers' Sense of Efficacy Scale* in your research. A copy of both the long and short forms of the instrument as well as scoring instructions can be found at:

http://www.coe.ohio-state.edu/ahoy/researchinstruments.htm

Best wishes in your work,

Anita Woolfolk Hoy, Ph.D.
Professor

Appendix J:

Permission to Use Questions from The MetLife Survey of the American Teacher:

Collaborating for Student Success

Request to use selected questions from teacher survey Inbox x

Kimberly Kelly to Info, bcc: me show details Nov 6 (2 days ago) Reply

Hello,
I am a Ph.D. student at the University of Alaska Fairbanks. I enjoyed your research in, *The MetLife Survey of the American Teacher: Collaborating for Student Success (2009)* which was conducted by Harris Interactive. I am researching teacher's emotions and its impact on productivity.

May I use some of your survey questions from your study?

Thank you for your consideration.

Kim Kelly
Ph.D. Candidate
University of Alaska

Reply Forward

Info to me show details 8:18 AM (4 hours ago) Reply

Yes you will just need to cite Harris Interactive.

From: Kimberly Kelly [mailtokkelly2@alaska.edu]
Sent: Saturday, November 06, 2010 7:08 PM
To: Info
Subject: Request to use selected questions from teacher survey
- Show quoted text -

Appendix K:

Permission to Use Questions from The Assessment of Teacher Enjoyment, Anxiety, and Anger Related to Teaching

Zimbra **kimberly.kelly@k12northstar.org**

Antw: (Fwd) Re: Ph.D. dissertation

From : frenzel@psy.lmu.de Thu, Apr 15, 2010 07:10 AM
Subject : Antw: (Fwd) Re: Ph.D. dissertation 2 attachments
To : pekrun@edupsy.uni-muenchen.de
Cc : kimberly kelly <kimberly.kelly@k12northstar.org>

Dear Kim,

thank you for your interest in our research on teacher emotions. Attached I am sending you the current English version of our teacher emotion scales. The scales have not been published as such, please refer to our Chapter in Schutz & Zembylas, Advances in Teacher Emotion Research, for a reference. I am also attaching that chapter. Please do not hesitate to contact me if you have any further inquiries.

Regards
Anne Frenzel

Dr. Anne C. Frenzel

frenzel@psy.lmu.de

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Department of Psychology
Leopoldstr. 13
80802 Munich

Germany
---
phone +49 89 21 80 60 47
fax +49 89 21 80 52 50

Appendix L:

Permission to Use Questions from How Teachers Process and Respond to State-Level Education Reform Policies

Re: Permission to use teacher survey implemented in Persistence, Disillusionment .... paper

---

From : Kimberly A. Kelly <kimberly.kelly@k12northstar.org> Thu, Jun 03, 2010 05:37 PM
Subject : Re: Permission to use teacher survey implemented in Persistence, Disillusionment .... paper
To : David Conley <david_conley@epiconline.org>

Thank you Dr. Conley!
I was going to tweek it only a tiny bit so that it reflects Alaska state and federal law, is that ok?

Do you have any validity/reliability stats on it?

Thank you again Dr. Conley. I'll be happy to share the results with you. The survey will go out this fall.

Kim
----- Original Message -----
From: "David Conley" <david_conley@epiconline.org>
To: "Kimberly A. Kelly" <kimberly.kelly@k12northstar.org>
Sent: Thursday, June 3, 2010 9:57:21 AM
Subject: Re: Permission to use teacher survey implemented in Persistence, Disillusionment .... paper

Kim,
You're free to use it as you see fit. Please share the results of your study with me when it's done.
Best wishes,
-DC
--
David T. Conley, Ph.D.
Professor
University of Oregon
Director, Center for Educational Policy Research
CEO, Educational Policy Improvement Center
720 E. 13th Ave., Suite 202
Eugene, OR 97401
Executive Assistant: 541-346-6126
Office direct: 541-346-6155
Mobile: 541-915-2832
http://www.epiconline.org
==========

Appendix M:

Permission from the OECD to Use Question from the TALIS Teacher Questionnaire

Sent: 26 January, 2012 8:43 PM
To: Rights, PAC
Subject: Re: Permission to use one question from TALIS for Dissertation

Dear Ms. Kelly,

Thank you for your message. We are pleased to confirm that you are authorized to reproduce for non-commercial purposes pages 22 and 23 of '' OECD Teaching and Learning International Survey, Teacher Questionnaire **http://www.oecd.org/dataoecd/7/32/43081350.pdf**'' in your dissertation survey. Next time, please ask us before reproducing any OECD material.

Please cite the material you wish to use as follows:

OECD Teaching and Learning International Survey, Teacher Questionnaire, http://www.oecd.org/dataoecd/7/32/43081350.pdf

Any other reproduction of OECD material in another work is subject to written permission from the OECD.

Please do not hesitate to contact us should you have any further queries

Best regards,

Dounia Boutamdja

Appendix N:

Survey – The Teacher Co-Production Survey

Teacher Coproduction

Educational reforms have had an impact on the lives of teachers. This survey is an effort to put together some of the pieces to see how teachers have been impacted by these reforms.

If you decide to take part, you will be asked to complete an online survey, which asks about your teaching experience, your attitude towards changes in education, and how you cope with stressful situations. This survey will take approximately 15 minutes to complete. This is the only survey that you will be asked to complete for this study.

Information that you provide in this survey is strictly confidential and will be reported as a group and not as data identifiable to a specific teacher. This information will be used in a doctoral dissertation and subsequent report, presentation, or publication; however you and the information that you provide will not be individually identifiable.

By checking the box below, I agree to participate in the study, and I understand that my participation is voluntary.

◯ I agree to participate in this voluntary study.

If you have questions after completing this survey, you may contact Kim Kelly at kkelly2@alaska.edu. If you have questions or concerns about your rights as a research participant, you can contact the UAF Office of Research Integrity at 474-7800 (Fairbanks area) or 1-866-876-7800 (toll-free outside the Fairbanks area) or fyirb@uaf.edu.

Teacher Coproduction

The first section of this survey is a brief set of questions about your background.

This information will be analyzed and discussed by groupings (for example, new teachers' views versus experienced teachers' views, or male teachers' views versus female teachers' views), rather than on an individual basis.

Gender

- ◯ Male
- ◯ Female

AGE

- ◯ 21-30
- ◯ 31-40
- ◯ 41-50
- ◯ 51-60
- ◯ 60+

ETHNICITY

- ◯ White
- ◯ Black/African American
- ◯ Asian or Pacific Islander
- ◯ Native American or Alaska Native
- ◯ Hispanic
- ◯ Mixed racial background
- ◯ Decline to answer
- ◯ Other (please specify)

Page 2

Teacher Coproduction

How many years have you been a teacher in the public schools?

- ◯ 0-3 years
- ◯ 4-5 years
- ◯ 6-10 years
- ◯ 11-15 years
- ◯ 16-20 years
- ◯ More than 20 years

What was the last level of school that you completed?

- ☐ four-year college
- ☐ some graduate credits
- ☐ Master's degree
- ☐ credits beyond Master's degree
- ☐ Ph.D./Ed.D.

Teacher Coproduction

Do you teach at a(n): Please check all that apply.

- [ ] Elementary school
- [ ] PK-2 or K-2
- [ ] PK-3 or K-3
- [ ] PK-5 or K-5
- [ ] PK-6 or K-6
- [ ] PK-8 or K-8
- [ ] PK-12 or K-12
- [ ] 3-5
- [ ] 6-8
- [ ] 6-12
- [ ] 7-8
- [ ] 7-12
- [ ] 9-12
- [ ] charter
- [ ] magnet
- [ ] career and technical education
- [ ] youth facility
- [ ] Other (please specify)

Approximately how many students attend your school?

- [ ] 1-25
- [ ] 26-50
- [ ] 51-125
- [ ] 126-275
- [ ] 276-450
- [ ] 451-2000

Teacher Coproduction

Is your school a Title I school (a school that has approximately 40% or more of its students that come from low-income families)?

- ☐ Yes
- ☐ No
- ☐ I don't know

Teacher Coproduction

The next group of questions is designed to help 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 based on your experience since the beginning of this school year.

Please indicate how much you as a teacher can influence the following classroom situations.

	Little to none	Some	Quite a bit	A great deal
a. How well can you provide appropriate challenges for very capable students?	◯	◯	◯	◯
b. How well can you keep a few problem students form ruining an entire lesson?	◯	◯	◯	◯
c. To what extent can you craft good questions for your students?	◯	◯	◯	◯
d. To what extent can you make your expectations clear about student behavior?	◯	◯	◯	◯
e. How much can you do to get through to the most difficult students?	◯	◯	◯	◯
f. How much can you do to help your students think critically?	◯	◯	◯	◯
g. How much can you do to motivate students who show low interest in schoolwork?	◯	◯	◯	◯
h. How much can you do to foster student creativity?	◯	◯	◯	◯
i. How much can you do to control disruptive behavior in the classroom?	◯	◯	◯	◯
j. How much can you do to get students to believe they can do well in schoolwork?	◯	◯	◯	◯
k. How well can you establish a classroom management system with each group of students?	◯	◯	◯	◯
l. How much can you do to help your students value learning?	◯	◯	◯	◯
m. How well can you respond to defiant students?	◯	◯	◯	◯
n. How well can you respond to difficult questions from your students?	◯	◯	◯	◯
o. How well can you establish routines to keep activities running smoothly?	◯	◯	◯	◯
p. How much can you gauge student comprehension of what you have taught?	◯	◯	◯	◯
q. How much can you do to improve the understanding of a student who is failing?	◯	◯	◯	◯
r. How much can you do to adjust your lessons to the proper level for individual students?	◯	◯	◯	◯
s. How much can you do to calm a student who is disruptive or noisy?	◯	◯	◯	◯
t. How much can you use a variety of assessment strategies?	◯	◯	◯	◯
u. To what extent can you provide an alternative explanation or example when students are confused?	◯	◯	◯	◯
v. How much can you assist families in helping their children do well in school?	◯	◯	◯	◯
w. How much can you do to get children to follow classroom rules?	◯	◯	◯	◯
x. How well can you implement alternative strategies in your classroom?	◯	◯	◯	◯

Teacher Coproduction

This section of the survey asks for your opinion regarding the implementation of the federal law known as No Child Left Behind (2002).

Based on your experience as a teacher, please respond to the following statements.

I BELIEVE THAT CURRENT EDUCATIONAL REFORM EFFORTS ARE

	Strongly agree	Agree	Disagree	Strongly disagree
a. providing students with an enriched educational program.	☐	☐	☐	☐
b. meeting the educational needs of low achieving children.	☐	☐	☐	☐
c. affording parents meaningful opportunities to participate in the education of their children.	☐	☐	☐	☐
d. providing students with an accelerated educational program.	☐	☐	☐	☐
e. exposing students to challenging academic content.	☐	☐	☐	☐
f. turning around low-performing schools.	☐	☐	☐	☐
g. providing students from low-performing schools with better opportunities for learning.	☐	☐	☐	☐
h. holding schools accountable for improving student achievement.	☐	☐	☐	☐
i. allocating resources to the most needy schools.	☐	☐	☐	☐
j. providing teachers with greater decision-making authority in how they enhance student achievement.	☐	☐	☐	☐
k. closing the achievement gap between high- and low-performing children.	☐	☐	☐	☐
l. exposing students to effective instructional strategies.	☐	☐	☐	☐
m. closing the achievement gap between advantaged and disadvantaged children.	☐	☐	☐	☐
n. elevating the quality of teacher instruction through professional development.	☐	☐	☐	☐
o. holding teachers accountable for improving student achievement.	☐	☐	☐	☐
p. providing students with scientifically-based instructional strategies.	☐	☐	☐	☐

Teacher Coproduction

I BELIEVE STANDARDS BASED ASSESSMENTS (SBAs)/High School Qualifying Exam SCORES ARE:

	strongly agree	agree	disagree	strongly disagree
a. a reliable indicator of student achievement.	☐	☐	☐	☐
b. hindering the educational process in Alaska.	☐	☐	☐	☐
c. a valid indicator of teacher effectiveness.	☐	☐	☐	☐
d. problematic in how they are currently used by school districts.	☐	☐	☐	☐
e. only one measure of student achievement; other sources of information should be used.	☐	☐	☐	☐
f. encouraging teachers to "teach to the test."	☐	☐	☐	☐
g. creating stress for the classroom teacher in its use to measure teacher effectiveness.	☐	☐	☐	☐

Teacher Coproduction

One educational reform being implemented in the state is merit pay, which allows school districts to provide financial incentives to teachers for different reasons.

Based on your experience as a teacher, please respond to the following statements.

I BELIEVE FINANCIAL INCENTIVES FOR TEACHEARS (a.k.a. merit pay) SHOULD BE GIVEN TO THE TEACHER WHO....

	strongly agree	agree	disagree	strongly disagree
a. consistently works harder, putting in more time and effort than other teachers.	☐	☐	☐	☐
b. has students who score higher than similar students on standardized tests.	☐	☐	☐	☐
c. earns accreditation through from the National Board for Professional Teaching Standards (a.k.a. "National Certification").	☐	☐	☐	☐
d. specializes in hard-to-fill subjects, such as science or mathematics.	☐	☐	☐	☐
e. improves significantly their students' reading and math skills by the end of the year.	☐	☐	☐	☐
f. teaches hard-to-reach students.	☐	☐	☐	☐
g. consistently receives outstanding evaluations.	☐	☐	☐	☐
h. works in low-performing schools.	☐	☐	☐	☐

Teacher Coproduction

A person's attitude is often influenced by a multitude of factors, such as: the attitudes of others, one's personal value system, or one's understanding of a situation, to name a few.

Now think about your attitude towards current and proposed educational reforms (i.e. No Child Left Behind, merit pay for teachers). Please read the following list of possible factors that may impact your attitude of support or nonsupport towards current and proposed educational reforms.

Choose the response that best matches the degree to which each factor impacts your attitude of support or nonsupport of educational reforms.

	To a great extent	Somewhat	Very little	None at all
My philosophical beliefs as a teacher.	○	○	○	○
Opinions of my closest colleagues at school.	○	○	○	○
My experience as a teacher.	○	○	○	○
The media (newspaper, t.v.).	○	○	○	○
My personal value system.	○	○	○	○
Generally held attitudes of my colleagues at school.	○	○	○	○
My understanding of the reforms.	○	○	○	○
What I learned in my Education course work.	○	○	○	○
My principal's opinion of school reforms.	○	○	○	○
How involved I have been in the reform process.	○	○	○	○
My school's history with school reform.	○	○	○	○

Teacher Coproduction

As a teacher, you work with many different types of learners with different learning characteristics and backgrounds.

In this next session, you will read two different scenarios about how students performed on the Standards Based Assessments (SBAs) or the High School Qualifying Exam (HSQE). Please answer the questions that follow each scenario based on your experience as a teacher.

In your class, you have noticed there is a group of students who are very bright. They work hard in class, finish their assignments, and complete their homework. They can work independently and rarely ask for help.

At the end of the school year, these students DID NOT do well on the SBAs / HSQE.

In your opinion, what is the main reason these students did NOT do well on the SBAs/HSQE?

- ◯ Students' ability
- ◯ Your ability to teach these students
- ◯ Students' effort
- ◯ Your effort as their teacher
- ◯ Test difficulty
- ◯ Luck

Teacher Coproduction

As their teacher, do you think the CAUSE of the students' poor performance on the SBAs/HSQE .....

reflects an aspect of yourself	8	7	6	5	4	3	2	reflects an aspect of others
is manageable by you	8	7	6	5	4	3	2	is not manageable by you
is permanent	8	7	6	5	4	3	2	is temporary
over which others HAVE control	8	7	6	5	4	3	2	over which others have NO control
is inside of you	8	7	6	5	4	3	2	is outside of you
is stable over time	8	7	6	5	4	3	2	is variable over time
is under the power of other people	8	7	6	5	4	3	2	is not under the power of other people
reflects something about you 9	8	7	6	5	4	3	2	reflects something about others 1

Teacher Coproduction

1	something over which you have power	8	7	6	5	4	3	2	something over which you have NO power
2									
3	unchangeable	8	7	6	5	4	3	2	changeable
4									
5	something other people can control	8	7	6	5	4	3	2	something other people CANNOT control
6									

Teacher Coproduction

Do you think the CAUSE of the students' poor performance on the SBAs/HSQE

reflects an aspect of the student	8	7	6	5	4	3	2	reflects an aspect of others
is manageable by the student	8	7	6	5	4	3	2	is not manageable by the student
is permanent	8	7	6	5	4	3	2	is temporary
is inside of the student	8	7	6	5	4	3	2	is outside of the student
is stable over time	8	7	6	5	4	3	2	is variable over time
is under the power of other people	8	7	6	5	4	3	2	is not under the power of other people
reflects something about the student	8	7	6	5	4	3	2	reflects something about others
something over which the student has power	8	7	6	5	4	3	2	something over which the student has NO power

Teacher Coproduction

	unchangeable	8	7	6	5	4	3	2	changeable
*	○	○	○	○	○	○	○	○	○

	something other people can control	8	7	6	5	4	3	2	something other people CANNOT control
*	○	○	○	○	○	○	○	○	○

Teacher Coproduction

In your class, you have a group of students who have limited ability. They seldom do their class work completely, or they hurry through it, making many errors. They rarely do their homework or study at home, but always have excuses for why they haven't. When encouraged to slow down and work carefully, their work can be appropriate for their grade level.

At the end of the school year, these students PERFORM WELL on the SBAs/HSQE.

In your opinion, what is the main reason these students did poorly on the SBAs/HSQE?

- ◯ Students' ability
- ◯ Your ability to teach these students
- ◯ Students' effort
- ◯ Your effort as these students' teacher
- ◯ Test difficulty
- ◯ Luck

Teacher Coproduction

As the students' teacher, do you think the cause of the students' strong performance is something that ...

reflects an aspect of yourself	8	7	6	5	4	3	2	reflects an aspect of the situation
is manageable by you	8	7	6	5	4	3	2	not manageable you
permanent	8	7	6	5	4	3	2	temporary
something you can control	8	7	6	5	4	3	2	something you cannot control
something over which others have control	8	7	6	5	4	3	2	over which others have NO control
inside of you	8	7	6	5	4	3	2	outside of you
stable over time	8	7	6	5	4	3	2	variable over time
under the power of other people	8	7	6	5	4	3	2	not under the power of other people

Teacher Coproduction

1.	something about you	8	7	6	5	4	3	2	something about others
2.	over which you have power	8	7	6	5	4	3	2	over which you have NO power
3.	unchangeable	8	7	6	5	4	3	2	changeable
4.	something other people can control	8	7	6	5	4	3	2	something other people CANNOT control

Teacher Coproduction

Do you think the CAUSE of the students' STRONG performance on the 9BAs/HSQE

*	reflects an aspect of the student	8	7	6	5	4	3	2	reflects an aspect of the situation
*	is manageable by the student	8	7	6	5	4	3	2	is not manageable by the student
*	is permanent	8	7	6	5	4	3	2	is temporary
*	is something the student can control	8	7	6	5	4	3	2	something the student cannot control
*	is something over which others have control	8	7	6	5	4	3	2	is something over which others have NO control
*	is inside of the student	8	7	6	5	4	3	2	is outside of the student
*	is stable over time								is variable over time
*	is under the power of other people	8	7	6	5	4	3	2	is not under the power of other people

Teacher Coproduction

is under the power of other people	8	7	6	5	4	3	2	is not under the power of other people
○	○	○	○	○	○	○	○	○
is something about the student	8	7	6	5	4	3	2	is something about others
○	○	○	○	○	○	○	○	○
something over which the student has power	8	7	6	5	4	3	2	over which the student has no power
○	○	○	○	○	○	○	○	○
unchangeable	8	7	6	5	4	3	2	changeable
○	○	○	○	○	○	○	○	○
something other people can control	8	7	6	5	4	3	2	something other people CANNOT control
○	○	○	○	○	○	○	○	○

Teacher Coproduction

The following questions are about ONE, SPECIFIC class that you are working with this year (beginning this fall). Think about THIS SPECIFIC CLASS when you answer the following questions.

Overall, how do you rate the level of academic performance in this class?

- ◯ rather low
- ◯ average
- ◯ high

Overall, how do you rate the level of motivation in this class?

- ◯ rather low
- ◯ average
- ◯ high

Overall, how do you rate the level of academic discipline in this class?

- ◯ rather low
- ◯ average
- ◯ high

The following questions pertain to feelings you may have experienced teaching the class that you described above. Before answering the following questions, please recall some typical situations that you have experienced when teaching this class. Please indicate how you typically feel after teaching this class.

	Strongly disagree	Disagree	Agree	Strongly Agree
I was worried that my teaching in this class was not really going well.	◯	◯	◯	◯
I felt a good reason for being happy when I taught this class.	◯	◯	◯	◯
I felt tense and nervous when I taught this class.	◯	◯	◯	◯
I felt distressed when I was preparing for this class.	◯	◯	◯	◯
Teaching this class was really frustrating.	◯	◯	◯	◯
I taught this class with enthusiasm.	◯	◯	◯	◯
I was worried when I thought about teaching this class.	◯	◯	◯	◯
Because I had so much fun teaching this class I gladly prepared for it.	◯	◯	◯	◯
In this class I became really mad.	◯	◯	◯	◯
I felt annoyed when I taught this class.	◯	◯	◯	◯
As is usually the case with this class, I was angry when was teaching it.	◯	◯	◯	◯
I enjoyed teaching this class.	◯	◯	◯	◯

Teacher Coproduction

Teaching can be a stressful occupation. The following questions ask you about what you generally do and feel when you feel stressed in your job as a teacher.

Different teachers respond to stress in different ways, but this section focuses on how you've tried to deal with stress.

Please read each of the following items that describe a particular way of coping with the stress that you experience as a teacher. Decide to what extent you cope with your stress by doing what the item says. Make your answers as true FOR YOU as you can.

	Never	Sometimes	Often	Very often
a. I concentrate my efforts on doing something about the problem.	○	○	○	○
b. I work hard to make the situation better.	○	○	○	○
c. I try to plan what to do about the problem.	○	○	○	○
d. I think about the best way to deal with the problem.	○	○	○	○
e. I focus on dealing with the problem, and let other things go if I have to.	○	○	○	○
f. I try to keep myself from getting distracted by other thoughts or activities.	○	○	○	○
g. I ask someone for advice about the problem.	○	○	○	○
h. I talk to someone I trust about what is bothering me.	○	○	○	○
i. I try to look at things positively.	○	○	○	○
j. I learn to live with my problems.	○	○	○	○
k. I get used to the idea that it happened.	○	○	○	○
l. I try to find comfort in my religion or spiritual beliefs.	○	○	○	○
m. I pray.	○	○	○	○
n. I refuse to believe that it has happened.	○	○	○	○
o. I realize I cannot deal with it, and give up.	○	○	○	○
p. I stay busy and try not to think about it.	○	○	○	○
q. I watch TV and movies to get my mind off the problem.	○	○	○	○
r. I make fun of the situation.	○	○	○	○
s. I have a drink to make myself feel better.	○	○	○	○

Teacher Coproduction

Teachers facilitate learning in their classroom in different ways. The following section lists a number of strategies that teachers may or may not use in their classroom. In this section, please estimate how often you do the following activities in your classroom.

Approximately how often do each of the following activities happen in your class throughout the school year?

	Never	Sometimes	Quite a bit	Almost always
a. I explicitly state learning goals.	○	○	○	○
b. I review with the students the homework they prepared.	○	○	○	○
c. Students work in small groups to come up with a joint solution to a problem or task.	○	○	○	○
d. I give different work to the students who have difficulties learning and/or to those who can advance faster.	○	○	○	○
e. I ask my students to suggest or to help plan classroom activities or topics.	○	○	○	○
f. At the beginning of the lesson I present a short summary of the previous lesson.	○	○	○	○
g. Students work on projects that require at least one week to complete.	○	○	○	○
h. Students work in groups based upon their abilities.	○	○	○	○
i. Students make a product that will be used by someone else.	○	○	○	○
j. I ask my students to write an essay in which they are expected to explain their thinking or reasoning at some length.	○	○	○	○
k. Students debate and/or argue for a particular point of view which may not be their own.	○	○	○	○

Teacher Coproduction

Thank you for your participation in this study.

(FOR PILOT STUDY:)
Your opinion on this survey is very important. Could you please share your opinion of this survey by answering the following questions?

The length of this survey was

- ◯ fine
- ◯ too short
- ◯ too long
- ◯ Other (please specify)

The wording of the questions was:

- ◯ fine
- ◯ confusing
- ◯ Other (please specify)

Please provide any other feedback that you have on this survey:

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