

AN EMPIRICAL STUDY OF THE PROMISE AND EFFECTIVENESS OF TEACHERS  
FROM PROFESSIONAL DEVELOPMENT VS. TRADITIONAL MODELS OF EDUCATION

by

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## ABSTRACT

Teacher preparatory programs need to evaluate their programs to determine if they are producing highly effective teachers. This study utilized the professional development school (PDS) program versus the traditional program to determine if there was a difference in the promise and effectiveness of pre-service teachers.

The study analyzed the difference between PDS and traditional pre-service teachers utilizing descriptive statistics, *t*-tests for independent means, and the Fisher's Exact Test to consider the background of pre-service teachers. Promise was assessed using *t*-tests for independent means focusing on the Praxis II scores. Effectiveness was evaluated using the Mann-Whitney U tests for independent means utilizing the percent of students scoring proficient on the Missouri Assessment Program (MAP) tests during the teachers' first year teaching. Effect size and power were also calculated.

The findings yielded one statistically significant difference between PDS and traditional pre-service teachers within the demographic evaluation; there were proportionately more males enrolled in the traditional program. There were no statistically significant differences found in the areas of promise and effectiveness. When measuring the effect sizes a medium –to-large difference was found showing the mean percent of proficient students in the PDS group being larger than the mean percent of proficient in the traditional group in mathematics. This result should be considered an area of further investigation.

This study is recommended to be replicated on a statewide basis to include all colleges that participate in PDS programs due to the medium-to-large effect sizes found. Qualitative studies are warranted to learn more about the impact the PDS program has on pre-service teachers and the students in their future classrooms.

## Chapter 1

### INTRODUCTION

Due to the increasing demands on public school educators, the focus on teacher quality has never been more apparent. The United States Department of Education, through the No Child Left Behind Act (NCLB), requires that all states ensure their teachers are highly qualified. A Blueprint for Reform, The Reauthorization of the Elementary and Secondary Education Act calls for statewide definitions of effective teachers and highly effective teachers. Individual states will be obligated “to measure, develop, and improve the effectiveness of their teachers, leaders, and preparation programs” (United States Department of Education, March 2010, p. 14). Policy makers, community leaders, school district administrators, and education critics demand and will continue to demand highly qualified teachers who are effective with instruction and assessment of student learning and can sustain school improvement.

With the requirement for highly effective teachers comes the insistence for better prepared new teachers into the education profession. The Blueprint for Reform proposes a statewide data system to link teacher preparation programs to their graduates based on job placement, student growth, and retention outcomes (United States Department of Education, March 2010). College preparatory programs will need to increase their accountability to ensure they are producing effective new teachers. The National Research Council (NRC) report, *Preparing Teachers: Building Evidence for Sound Policy*, focuses “on three aspects of teacher preparation that are likely to have the strongest effects (on student achievement): content knowledge, field experience, and the quality of teacher candidates” (2010, p. 180). These three components closely align with the objectives of the knowledge, performance, and disposition indicators within the Interstate New Teacher Assessment and Support Consortium (INTASC)

Core Standards (Council of Chief State School Officers). The INTASC Core Standards are utilized across the nation as a framework for all teacher preparatory programs as they develop coursework in the areas of foundational theory, philosophy and methodology of education.

Throughout their college experience, pre-service teachers begin to develop and hone their skills within their chosen area of study. Content knowledge is acquired through course work and practice within the students' general education requirements and the courses necessary for certification within their given field. Each state is required to give a proficiency exam of basic skills or content knowledge in order for pre-service teachers to gain admittance into an undergraduate professional teacher education program (H.R. 747, 1985). In addition, the NRC (2010) cited the National Association of State Directors of Teacher Education and Certification, which indicated that "forty-two states require some form of teacher testing as a part of the certification or licensure process" (p. 156). A variety of different assessments and minimum proficiency rates are used by each specific state providing licensure to teacher education candidates.

The National Council for Accreditation of Teacher Education (NCATE) defines dispositions as "professional attitudes, values, and beliefs demonstrated through both verbal and non-verbal behaviors as educators interact with students, families, colleagues, and communities" (National Council for Accreditation of Teacher Education). Faculty and clinical faculty of teacher education programs assess these dispositions based on observable behaviors both in P-12 school settings and teacher preparatory courses. These positive behaviors support student development and promote learning to maintain school improvement. Dottin (2006) believes that the dispositions that teacher preparatory programs nurture and assess must be set in the context of methods and practices within their own knowledge and beliefs about teaching. Diez (2006)

proposes five principles key to the assessment of professional dispositions that include the following components: clarification and active demonstration, structured and ongoing observation/assessment, teacher candidate reflection, public and explicit evaluation criteria, and modeling of these dispositions. As indicated with the INTASC Core Standards, content knowledge and dispositions are integrated into all areas of teacher preparation. It is, then, essential that higher education faculty avoid “the disconnect among knowledge, skills, and dispositions” (Diez, 2006, p. 51).

With content knowledge and dispositions addressed, field experiences must be the area of specific focus. The Blueprint for Reform calls for teachers, school leaders and other education stakeholders to implement innovative, collaborative practices to ensure novice and practicing teachers will improve their knowledge and skills in delivering instruction within the areas of literacy, mathematics, science, social science, among others. The National Research Council (2010) states that by establishing links between teacher preparation and learning, researchers can recognize features of pre-service programs that attract quality teacher candidates, determine ways teachers’ knowledge impacts student achievement, and identify characteristics of clinical practices that benefit student teacher candidates. Teitel (2003) challenges school districts and universities to provide partnerships that go beyond school improvement plans to focus on improvement of common goals and student learning.

The National Council for Accreditation of Teacher Education (NCATE) facilitated the Blue Ribbon Panel on Clinical Preparation and Partnerships for Improved Student Learning to attend to the gap amid teacher preparation and the needs of P-12 schools (National Council for Accreditation of Teacher Education, 2010). As a result from NCATE (2010) study, ten design principles for clinically based preparation programs were established which include:

1. Student learning is the focus.
2. Clinical preparation is integrated throughout every facet of teacher education in a dynamic way.
3. A candidate's progress and the elements of a preparation program are continuously judged on the basis of data.
4. Programs prepare teachers who are expert in content and how to teach it and are also innovators, collaborators and problem solvers.
5. Candidates learn in an interactive professional community.
6. Clinical educators and coaches are rigorously selected and prepared and drawn from both higher education and the P-12 sector.
7. Specific sites are designated and funded to support embedded clinical preparation.
8. Technology applications foster high-impact preparation.
9. A powerful (research and development) agenda and systematic gathering and use of data support continuous improvement in teacher preparation.
10. Strategic partnerships are imperative for powerful clinical preparation. (National Council for Accreditation of Teacher Education, pp. 5-6).

These principles were recognized as essential to effectively design clinically based preparation programs; “the panel calls for clinically based preparation [programs], which fully integrates content, pedagogy, and professional coursework around a core of clinical experiences” (p. 8).

The strategic partnerships described within this report seem to follow the characteristics of a professional development school (PDS), an enhanced field experience for pre-service teachers utilized to develop their content knowledge, skills and dispositions that are so necessary to become a highly effective teacher. Johnston (2000) of Ohio State University reports that,

Our PDSs have made a difference. Teacher education programs are stronger and more focused now, collaborative efforts with schools make it possible to connect theory and practice, inquiry pervades everything we do, and students come out of these programs with more professional attitudes and abilities than were apparent in earlier, more traditional programs (Johnston, Cramer, & Brosnan, 2000, pp. 2-3).

But have professional development schools made a difference within the areas required of certification? Are the new teachers who graduate from an institution that has a clinical field experience more knowledgeable about effective practices than their traditional field experience counterparts? Are these clinical practice field experiences producing teachers that are more effective in literacy and mathematics instruction as what is called for by the Blueprint for Reform? These are questions that merit further examination. This study utilized the clinical field experience model of PDS as a guide to research on the preceding questions.

### **Statement of the Problem**

Researchers agree that decisions made by classroom teachers and the performance of those individual teachers' impact student achievement. Wright, Horn, and Sanders (1997) noted in their study of nearly 60,000 students within grades three through five,

The most important factor affecting student learning is the teacher. In addition, the results show wide variation in effectiveness among teachers. The immediate and clear implication of the findings is that seemingly more can be done to improve education by improving the effectiveness of teachers than any other single factor. Effective teachers appear to be effective with students of all achievement levels of heterogeneity in their classes (p. 63).

In addition, Haycock (1998), Marzano (2003), and Sanders and Horn (1994) revealed that students who spend a year in a classroom with a highly effective teacher versus a less effective teacher will have dramatically different achievement levels on standardized test scores. Marzano (2003) concludes, effective teachers are “teachers that employ effective instructional strategies, classroom management techniques, and classroom curricular design in a fluent, seamless fashion” (p. 77). Studies such as these and many others substantiate the impact an effective teacher can have on student achievement.

With the research provided on the impact of effective teachers, the call for statewide definitions of effective and highly effective teachers, and the obligation for college preparatory programs to increase their accountability to ensure they are producing effective new teachers, the statement of the problem became defined. This study sought to determine if professional development schools produce more promising pre-service teachers and more effective new teachers than a traditional elementary education model.

### **Purpose**

The purpose of this causal comparative study was to determine if there is a difference in the promise and effectiveness of pre-service teachers in the professional development school versus a traditional school model within Macon University (pseudonym). Promise was measured by Praxis II tests and effectiveness was measured by the Missouri Assessment Program (MAP) state assessment scores. Details regarding the method of the study were presented in the methodology section of this study.

### **Research Questions**

Based on the purpose of this study, the following research questions were addressed:

1. Is there a difference between PDS and traditional pre-service teachers on the demographic characteristics of age, gender, undergraduate grade point average (GPA), and CBASE English composite score?
2. Is there a difference between PDS and traditional pre-service teachers on their overall Praxis II Test score (“promise”)?
3. Is there a difference between PDS and traditional pre-service teachers on the percentage of their students scoring proficient and non-proficient on the MAP test (“effectiveness”) in a) communication arts and b) mathematics during their first year teaching?

### **Hypotheses**

According to Creswell (2009), there are two types of hypotheses, null and alternative. A null hypothesis makes a prediction that no relationship or difference exists between groups on a variable. An alternative hypothesis, which can be directional or non-directional, is used by a researcher to make predictions about an expected outcome. Null hypotheses were utilized for this study.

Hypothesis for Research Question #1: There is no significant difference between the pre-service teachers practicing within a PDS model and the pre-service teachers practicing within a traditional model on the demographic characteristics of age, gender, undergraduate GPA, and CBASE English composite score.

Hypothesis for Research Question #2: There is no significant difference between the pre-service teachers practicing within a PDS model and the pre-service teachers practicing within a traditional model on the Praxis II test.

Hypothesis for Research Question #3: There is no significant difference between the pre-service teachers that practiced within the PDS model and the pre-service teachers practicing within a traditional model on the percentage of their students scoring proficient and non-proficient on the MAP test in a) communication arts and b) mathematics during their first year teaching.

### **Conceptual Framework**

According to Creswell (2009), a theory within quantitative research is viewed as a “scientific prediction or explanation” (p. 51). Kerlinger (1979) defines a theory as “a set of interrelated constructs (variables), definitions, and propositions that presents a systematic view of phenomena by specifying relation among variables, with the purpose of explaining a natural phenomena” (p. 64). In addition, Creswell (2009) affirms that a “theory is an interrelated set of constructs (or variables) formed into propositions, or hypotheses, that specify the relationship among the variables” (p. 51). A theory helps to explain or predict phenomena that occur, thus providing the explanation of how and why an independent variable predicts the dependent variable. For instance, if situated learning is different from other types of learning, then one should be able to predict and observe the traits, behaviors, and outcomes of pre-service teachers that are characteristic to these theories.

Learning to teach within a PDS program could be supported by the ideas of Putnam and Borko (2000) which state “interactions in one’s environment are major determinates of both what is learned and how learning takes place” (p. 5). Researchers such as Greeno (1997), Lave (1988), Rogoff (1995), and Vygotsky (1978) have provided learning theories that emphasize social and contextual learning. These theories offer that learning is ingrained in cultural and

institutional contexts. Lave and Wenger (1991) identified a theory of situated learning where learning occurs as a direct result of the activity, context and culture in which it takes place. The physical and social contexts of learning are critical components of what is learned and the extent of that learning. Stein (1998) provides the view of situated learning theory with four major premises:

1. Learning is grounded in the actions of everyday situations;
2. Knowledge is acquired situationally and transfers only to similar situations;
3. Learning is the result of a social process encompassing ways of thinking, perceiving, problem solving and interacting in addition to declarative and procedural knowledge;
4. Learning is not separated from the world of action, but exists in robust, complex, social environments (p. 2).

Situated learning theory, as discussed by Lave and Wenger (1991), provides that learning is not a separate act occurring in isolation, but an “integral aspect of practice... part of generative social practice in the lived-in world” (p. 34-35). Yinger and Hendricks-Lee (1993) acknowledge that knowledge is inherent within systems: cultural, physical, social-historical and personal systems. In essence, knowledge and learning occurs through participation and interaction with others, through mutual relationship building, identification of identities, and engagement within a community of practice (Lave & Wenger, 1991). This study of pre-service teachers situated in professional development schools or in a traditional model called attention to the learning pre-service teachers acquired and how effective they were in the classroom.

By connecting a clinical field experience and the extensive requirements of teacher certification, the Holmes Group framed the goals of the professional development school. Tomorrow’s Schools (1990) stressed collaboration with P-12 schools. The Holmes Group

(1990) believed that teaching and learning would continue to be the focus for universities and P-12 schools, creating learning communities for teachers, pre-service teachers, students, and university faculty. Through these communities of practice, joint professional growth opportunities would support academic research to improve student achievement for all students. The Holmes Group (1995) maintained that schools of education should be accountable to the profession of education and the public. The call for higher standards for education and teacher education programs by the Holmes Group (1986, 1990, 1995) connects with the current movement of the United States Department of Education with the Blueprint for Reform and embraces the pre-service teacher situated in a clinical practice experience.

### **Significance of the Study**

This study is significant because it will help teacher preparatory institutions to determine the overall effectiveness of the PDS program for pre-service teachers becoming certified to teach and if clinical practice collaborative efforts benefit teacher education programs and pre-service teachers. The study will help determine whether the cost and effort to support and enhance pre-service teacher learning with PDS models is more or less effective when compared to the traditional model. This study will aid the state departments of education by verifying how Praxis II tests predict the promise of pre-service teachers within the proposed collaborative practices as described in the Blueprint for Reform. This study is significant for school districts as they review potential teacher applicants to determine which teacher candidates would likely be more effective with regard to student learning as first year teachers.

### **Definitions of Terms**

P-12: Private or public schools ranging from preschool to grade 12.

Pre-service teacher: For purpose of this study, pre-service teachers were students participating in an undergraduate elementary teacher education program.

Professional Development Schools: Institutions formed through partnerships between professional education programs and P-12 schools. Their mission is professional preparation of candidates, faculty development, inquiry directed at the improvement of practice and enhanced student learning” (National Council for Accreditation of Teacher Education). For the purpose of this study, the professional development schools researched comprised of an undergraduate elementary education program with students spending one full year in the student teaching classroom. This specific campus of focus is considered a completion program in the area of elementary education. All general education requirements and prerequisite courses were taken prior to the students senior year. As a part of methods lab, pre-service teachers attended beginning of the year professional development with their mentor teacher, participated in a field experience the first full week of school and continued working in the classroom two days each week throughout the fall semester. The coursework requirements of Methods of Teaching Elementary Math; Methods of Elementary Science and Art; Language Arts, Reading, Social Studies Methods; Methods Lab; and Elementary Classroom Management were taken in conjunction with the field experience requirement of PDS. The pre-service teacher, then continued with his/her student teaching experience within the same class throughout the spring semester. The only interruption during the course of this school year was the three week winter term practicum in which the pre-service teacher worked with a reading specialist to fulfill the requirements for a reading endorsement. (The practicum was the same experience for both the PDS and traditional programs.)

Traditional Teacher Education Program: For purpose of this study, the traditional program for the institution researched was comprised of an undergraduate elementary education program with students spending one full semester in the student teaching classroom. The specific campus

of focus is considered a completion program in the area of elementary education. All general education requirements and prerequisite courses were taken prior to the students' senior year. Pre-service teachers in the traditional program completed the coursework requirements of Methods of Teaching Elementary Math; Methods of Elementary Science and Art; Language Arts, Reading, Social Studies Methods; Methods Lab; and Elementary Classroom Management during the previous semester. Field experiences include a three week winter term practicum in which the pre-service teacher worked with a reading specialist to fulfill the requirements for a reading endorsement. (The practicum was the same experience for both the PDS and traditional programs.)

## **Chapter 2**

### **LITERATURE REVIEW**

There are two types of teacher education programs utilized for the basis of this study, the professional development school model and the traditional education model. Within this review of literature, a historical perspective of the professional development school program will be explored to emphasize the path through which professional development schools came into existence; research will be presented focusing on situated learning and the model of community of practice. As previously stated, regardless of the type of educational program, a majority of pre-service teachers are required to pass an assessment as a part of the certification or licensure process. Included is a review of literature to address the Praxis II assessments, followed by an examination of the literature on state assessments and their connections to the overall field of education and the PDS model of education.

#### **Historical Overview of PDS**

Professional development schools can be described as “institutions formed through partnerships between professional education programs and P-12 schools. Their mission is professional preparation of candidates, faculty development, inquiry directed at the improvement of practice, and enhanced student learning” (National Council for Accreditation of Teacher Education). As a model of teacher education and professional development, the PDS aims to provide practice for pre-service teachers, while developing knowledge and professional understanding of the novice, teacher educator, and veteran teacher (Darling-Hammond, 1994). Some participants in professional development schools incorporate inquiry and action research within the classroom and/or school setting, so that “findings can be disseminated to other

schools. As such, these schools are intended to play a pivotal role in restructuring public schooling” (Abdal-Haqq, 1998, p. 4).

Although NCATE has provided a working definition, in addition to standards and developmental guidelines that address the characteristics of PDS schools, a variety of PDS models exist and will continue to develop as schools work at enhancing teacher quality. There is no current data of the number of PDSs in existence, but research from informal data and survey results collected from 1994-1996 by the Clinical Schools Clearinghouse indicate that an estimated 637-650 PDSs were in existence at that time. These data also provided information about 84 documented school district/university partnerships within 38 states (American Association of Colleges for Teacher Education, 2008).

Recognized as professional development schools (Holmes Group, 1986), clinical schools (Carnegie Forum on Education and the Economy, 1986) and professional practice schools (Levine, 1992), PDS programs have been viewed as a way to attend to the call of reform. Regardless of the name, P-12 schools that enter into partnerships with universities in the preparation of pre-service teachers, development of faculty and promotion of student learning is an aim for all professional development schools. The initial structures of professional development schools were formed by John Dewey at the University of Chicago in 1887. Dewey viewed the Laboratory School as “a laboratory for testing and verifying new educational theories and principles” (Tanner, 1997, p. 18). This vision paved the way for other colleges of education and P-12 school districts to collaborate to serve as research sites and begin to reform teacher education.

The release of A Nation at Risk report in 1983 sparked a national interest in education. Local and state reform efforts were fueled by a Nation at Risk to propose legislation in its

response (Berliner & Biddle, 1996). The next wave of school reform “called for dramatic improvements in the preparation of teachers as a foundation of other school reforms” (Darling-Hammond, 2005, p. 2). The establishment of the National Board for Professional Teaching Standards (NBPTS) and the notion of clinical schools was considered as a result of the Carnegie Forum on Education and the Economy (1986) report entitled *A Nation Prepared: Teachers for the 21<sup>st</sup> Century*, which called for an improvement in teaching and the development of partnerships between public schools and colleges of education to aide in the preparation of new teachers.

Clinical schools would link faculties in elementary and secondary schools, colleges of education, and colleges of arts and sciences to provide the best possible learning environment for teacher preparation... Participants in this partnership would have opportunities to reflect upon teaching and learning within the clinical school environment (Stallings & Kowalski, 1990, p. 225).

The Holmes Group (1986), a consortium of 96 research universities with teacher preparatory programs, first utilized the term professional development school in the report, *Tomorrow's Teachers*. This panel of educators envisioned that professional development schools would provide education faculty with the means to provide relevance of their practice by “1) mutual deliberation on problems with student learning, and their possible solutions; 2) shared teaching in the university and schools; 3) collaborative research on the problems of educational practice; and 4) cooperative supervision of prospective teachers” (p. 56). The Holmes Group (1990) further detailed the ideas in *Tomorrow's Schools* that professional development schools are influenced by the medical profession's teaching hospitals as a continuing growth and development opportunity for both the pre-service teacher and the professional educator. By

providing on-site experience for pre-professional preparation, professional development schools are models of enduring change within the educational arena (Levine, 1992).

### **Theory of Situated Learning**

Professional development schools follow the theory of situated learning; they provide pre-service teachers a clinical experience in which learning occurs as an integral part of practice, a part of the situated classroom and school environment (Lave & Wenger, 1991). As previously stated, situated learning theory maintains that knowledge is inherent within systems: cultural, physical, social-historical and personal systems (Yinger & Hindricks-Lee, 1993). Knowledge and learning takes place as practitioners engage with others, accumulating on-going experiences, interacting in communication, coaching and apprenticeship opportunities, and solving complex problems with the help of multiple perspectives (Wenger, McDermott, & Snyder, 2002). Pre-service teachers gain knowledge and experience within a professional development school, a community of practice.

The concept of engagement within a “community of practice” stems from the research of Lave and Wenger (1991) and Wenger (1998). Wenger claims that communities of practice are everywhere and people participate in a variety of these organizations within their work, school, home, or community. “Communities of practice are formed by people who engage in a process of collective learning in a shared domain of human endeavor... [They] are groups of people who share a concern or a passion for something they do and learn how to do it better as they interact together” (Wenger, 2006). Lave and Wenger (1991) illustrated their theory of the concept of situated learning within communities of practice through observation of different apprenticeships (e.g., midwives, US Navy quartermasters, and meat-cutters). Within the community of practice,

learners do not acquire individual structures or models to understand their world; rather they participate in a setting that provides the structure.

Lave and Wenger's (1991) research suggests a progression that learners move through from legitimate peripheral participation to full participation within a community. Practitioners with the community of practice initially connect with a population and learn at the periphery; initial interactions and activities are less central to the community. Knowledge is produced and continually negotiated through each social interaction. As the practitioners become more competent, they become more involved in the practices of the community. Lave and Wenger (1991) describe:

the relations between newcomers and old-timers... about activities, identities, artifacts, and communities of knowledge and practice. A person's intentions to learn are engaged and the meaning of learning is configured through the process of becoming a full participant in a socio-cultural practice (p. 29).

Newcomers learn about the everyday life of the community, how experienced teachers communicate and work together, how others not in the community interact with it, how other learners operate, and what the process is to become a full practitioner (Lave & Wenger, 1991). Newcomers build a sense of identity, learning to communicate and emulate the ways of the community.

The theory of situated learning and community of practice as described by Lave and Wenger (1991) rest outside the educational field, yet have strong connections to school-university partnerships. The PDS provides the structure for learning to occur for pre-service teachers, P-12 teachers, administrators, and staff in an integrated approach. Pre-service teachers join the community of practice to actively participate in collaboration, reflection, and socio-

cultural environment while developing their identity as a teacher. Darling-Hammond (1994) describes PDS partnerships as way for pre-service teachers to have “opportunities to observe, practice, debrief, and be counseled, as well as to consult, attend seminars, and reflect with colleagues. This combination would help interns acquire a broad set of understandings and abilities rather than a formulaic set of behaviors” (p.9). By being placed in a school community, pre-service teachers learn through participation and practice to develop an identity in a context of a community.

### **Research Influencing PDS**

Walters (1998) and Levine (1992) believe traditional teacher education programs should be redefined to emulate a program similar to an apprenticeship where teacher candidates are placed in a school setting. Within a clinical practice program integrated in the school setting, pre-service teachers are involved in thoughtful analysis of practice (Zeichner & Miller, 1997). Levine (1992) indicate that professionalization of schools is aligned with the progressive movement. Dewey (1933) promoted the Laboratory School and claimed teachers were “students of learning who could and should reflect on their own practice and learn from one another” (p. 8). Goodlad (1984) and the Carnegie Corporation (1986) supported the idea of teachers learning together. They believed that not only do novice teachers learn, but experienced teachers learn through teaching and reflective practice. PDS partnerships link the theory of the university and the practice of the school-based students to promote learning in pre-service teachers.

The Holmes Group’s analysis of teacher education and work with professional development schools connect to the theory of situated learning, community of practice, and legitimate peripheral participation. In the first report, *Tomorrow’s Teachers* (1986), the Holmes Group presented a vision of reform for both teacher education and the teaching profession by

developing higher standards for education. The belief of the Holmes Group (1986) was that “teaching would not improve without dramatic improvements in teacher education” (p. 12). Their goals included increasing the academic foundation of teachers, acknowledging the distinction between novice, competent and professional teachers, creating high standards for certification, and promoting a community of practice and research within the schools. The Holmes Group envisioned a collaborative effort where teachers, pre-service teachers and university faculty could work collectively seeking ways to meet the needs of students. The idea of this collaboration, compared to a teaching hospital, integrated research of professional practice and reconstruction of pedagogical knowledge; the thought that clinical experiences should be connected to the theories emphasized within university studies. The Holmes Group focused on the structure of teacher education, emphasizing specific subjects within the programs, connection of courses offered, pedagogical studies, and focus on student learning. “Universities must open up new connections with schools...such work would help to improve our understanding of instruction, and to sharpen teachers’ knowledge and skills” (Holmes Group, 1986, p. 28). The Holmes Group (1986) believed by creating this collaborative community teachers’ learning would increase and research within teaching and learning would be more common.

Similar to Lave and Wenger’s (1991) research on the progression learners make from legitimate peripheral participation to full participation within a community, the Holmes Group (1986) believe the view of teaching assignments must change. The Holmes Group describes their framework of the novice instructor, the professional teacher and the career professionals, those teachers who use their pedagogical expertise to help improve other teachers’ work, as well as help students succeed. This framework calls for entry and continuance of highly qualified candidates through rigorous educational requirements and increased standards within the field of

education. Teachers would be expected to continue to progress through the framework of certification in order to learn and improve; novice instructors and professional teachers would work with one another and with career professionals, the top practitioners in the field of education, to lead education to improvement and reform (Holmes Group, 1986).

The teaching assignment of the novice instructor would include pre-service teachers with a solid academic background and the ability to pass an entrance examination into the educational program. According to the Holmes Group (1986), these novice instructors would be required to demonstrate competence, commitment, and responsibility during a minimum of a year of supervised clinical practice within the context of the school setting before moving on to the first certificated position, the professional teacher. In addition to the supervised practice, advanced study of pedagogical and human learning would be required and supervised by the career professional. Similar to Lave and Wenger's (1991) beliefs, practitioners learning at the periphery, novice instructors begin practice teaching, while exploring the career of education.

Linking the progressive steps of teacher certification, the Holmes Group focused on the goals of the professional development school. In their second report, *Tomorrow's Schools* (1990), the Holmes Group stressed the importance of creating ties to P-12 schools. Schools and universities would work together to focus on teaching and learning, create learning communities for teachers, pre-service teachers, students, and university faculty, value continuous learning, and support academic research while working together to improve student achievement for all students. Within each report, the Holmes Group (1986, 1990, 1995) called for higher standards for education and teacher education programs. Specifically, *Tomorrow's Schools of Education* (1995), which appealed to make schools of education accountable to the profession of education

and the public. This call for accountability connects to the current movement of the United States Department of Education with the Blueprint for Reform.

The Holmes Group and the idea of professional development schools have had their critics. Labaree (1994) believes that the implementation of a clinical practice program similar to the training of doctors or lawyers is only a way to empower teacher educators to obtain a higher status within the university. Cuban (1987) describes the comparison to the medical field as a scheme to “boost public respect for teaching” (p. 350). He explains the tight structures that schools have in place, such as required student attendance, a school board adopted curriculum and the methodology of teaching a board adopted curriculum; teaching hospitals have patients that enter as a personal choice and voluntarily agreeing to uncommon treatments. PDS programs are a large time commitment for university faculty, expensive, and highly intensive for pre-service teachers (Castle, Fox, & Souder, 2006). They require a commitment to communication as an area of continual work and improvement (Schvarak, Coltharp, & Cooner, 1998).

In spite of the critics, PDS has surfaced as a premiere collaborative arrangement for preparing pre-service teachers in the United States (Levine, 1992). The NCATE Blue Ribbon Panel (2010) proposed a roadmap of how to rebuild teacher education which includes supporting partnerships of school districts and teacher preparation programs in order to more effectively meet the needs of all students. The panel supports providing “incentives to support programs that produce more effective teachers in high-needs schools and in needed disciplines” (p. 22). Whether being founded on the principles of the Holmes Group (1986), the Carnegie Group (1986), Levine (1992) or from criteria established in the Goodlad Report, Teachers for our Nations Schools (1990), they all have guidelines in common:

- 1) Improve the quality of instruction for P-12 students, pre-service teachers, and professional educators
- 2) Provide a research base that informs the teaching profession
- 3) Encourage school reform that allows for collaboration of school and university faculty to support changes in methods of teaching and learning. (Book, 1996).

### **Research Comparing PDS and Traditional Programs**

A wide range of studies have been performed to support the push for PDS partnerships over the traditional education programs. Latham and Vogt (2007) performed a 7-year longitudinal study of 1,000 graduates within the traditional and PDS programs and found PDS preparation as the one factor significantly influencing teacher retention. Institutions, including both P-12 school districts and university programs, involved in PDS partnerships praise the rewards and benefits of the collaborative exchange between faculty, team teaching efforts of university faculty and current P-12 teachers, and extended professional development opportunities (Castle, Fox, & Souder, 2006; Riley, Hurwitz, Hackett, & Miller, 2005; Schvarak, Coltharp, & Cooner, 1998; Vontz, Franke, Burenheide, & Bietau, 2007). Several qualitative studies find PDS student teachers more prepared and more confident to begin their first year teaching than their traditional trained counterparts (Book, 1996; Darling-Hammond, Chung, & Frelow, 2002; Sandholtz & Wasserman, 2001; Scharmann, 2007). Larson and Goebel (2008) found the collaboration of a PDS program gave pre-service teachers' a stronger sense of efficacy toward their career in education.

Castle and colleagues (2005, 2006, 2007) extensively researched the potential differences between the PDS and traditional candidate. These replicated studies utilized quantitative and qualitative data sources to review PDS trained and traditionally trained candidates at the point of

licensure. Quantitatively, only the initial study found PDS trained student teachers scored higher on student teaching evaluations on planning, instruction, management, and assessment (Castle et al., 2006). Qualitative research indicated, PDS candidates were more student-centered and had a stronger understanding of applying and integrating INTASC standards and exhibited more ownership in the classroom or school. In all three studies, PDS candidates exhibited deeper, more integrated thinking patterns, assessment-driven instruction, and reflection connected to practice (Castle, Fox, & Furhrman, 2007). Likewise, in a similar study, PDS trained teachers scored significantly higher on the North Carolina Teacher Performance Appraisal Instrument in the areas of discipline, classroom management, and instructional skills (Wait & Warren, 2002).

### **Competence and Characteristics of New Teachers**

INTASC standards were also utilized in a study to compare the perceived level of competence of pre-service teachers within three different models of field experience, a traditional model, a PDS model, and an Inquiry-Based PDS model (Capraro, Capraro, & Helfeldt, 2010). Time and the ability to student teach in the same classroom were the main differences between the traditional model and the two PDS models; participants in the traditional program spent two days each week in the school, whereas participants in the two PDS programs spent four days in the classroom. Both PDS programs were able to become more involved within the school community and have a more in-depth look at one school. The difference between the two PDS programs was the addition of planning and initiating an action research inquiry project. An INTASC Readiness Survey was utilized which concluded that the Inquiry-Based PDS model scored consistently higher than both the traditional and the PDS group. No significant difference was detected between the traditional group and the PDS group (Capraro et al., 2010). Thus, it may not be the amount of time spent within a field experience, but how

involved the pre-service teacher becomes within the field experience that makes the difference in quality.

Focusing specifically on the pre-service teacher, participants of PDS programs appear to be more career-minded; they seem to focus more on students and learning. Latham and Wedwick (2009) studied attitudes that influence teacher preparation choice. A majority of PDS participants provided career minded reasons for choosing the PDS program: to be better prepared to teach, to improve teaching effectiveness, and have an increased opportunity to interact in the classroom environment and with students. While a small number of traditional participants gave a reason that demonstrated career mindedness; the majority of the traditional program participants shared reasons of career hesitation and their desire to continue their college experience as why they chose the traditional program (Latham & Wedwick, 2009). One study found that when comparing traditional pre-service teachers to PDS pre-service teachers, the traditional students indicated having high levels of stress and an increase in concerns of student teaching, thus leading to emotional draining and the consideration of leaving the profession (Lerhardt & Clement, 1999).

### **Teacher Certification**

In addition to the requisite of the teacher education program and the student teaching component, teacher certification requirements in forty-two states call for some type of testing to meet licensure standards (National Research Council, 2010). Teacher assessments evolved in the 1960's and 1970's based on Competency Performance Based Teacher Education (Feiman-Nemser, 1990). The legislation of NCLB brought about the definition of highly qualified teachers and continued to require new teachers to meet content preparation or pass a state adopted test for certification. "Elementary school teachers who are new to the profession must

demonstrate competency by passing a rigorous state test on subject knowledge and teaching skills in reading and language arts, writing, math and other areas of the basic elementary school curriculum” (United States Department of Education, 2004). The United States Department of Education (2004) provided flexibility to states in determining the subjects and levels of understanding necessary to provide effective instruction. There are two testing companies, the National Evaluation Systems (NES) and the Educational Testing Services (ETS), which produce pre-service teacher examinations for licensure (United States Department of Education, 2005). A majority of the states use ETS’s Praxis Test Series as their required licensure examination (Flippo, 2002).

### **Praxis II Background and Research**

The Praxis series includes three types of tests: Praxis I (Pre-Professional Skills Tests) which is a qualifying test for students applying to teacher education programs. Praxis II (Subject Assessments) is an assessment offered to teacher candidates seeking initial teaching licensure. Praxis III (Teacher Performance Assessments) is an observation-based evaluation to assess beginning teachers’ classroom performance (Educational Testing Service, 2011) “The Praxis II subject assessments measure knowledge of specific subjects that K-12 educators will teach, as well as general and subject-specific teaching skills and knowledge” (Educational Testing Service, 2011) and are utilized across the nation as an option to meet the testing requirement for teacher certification. The Praxis II has two types of assessments for those pre-service teachers focusing on elementary education, 1). Elementary Education: Content Knowledge and 2). Elementary Education: Curriculum, Instruction, and Assessment. According to ETS (2011), individual teacher dispositions or potential success of the pre-service teacher are not covered by these licensure assessments.

ETS claims the Praxis Series assessments are “high quality and as free from bias as possible” (Educational Testing Services, 2010, p. 13). Development of the Praxis Series assessment system includes the following: verification of state, national and professional standards and curricula; job analysis; recruitment and development of test items by expert practitioners and National Advisory Committee; evaluation and feedback by education and specialty associations on developed tests, final approval and publication, and performance of pilot tests and quality control checks (Educational Testing Services, 2010). The Praxis Series of assessments utilize elementary education standards, content area standards, state, national and professional standards, along with current professionals in test development; alignment is made with higher education institutions to ensure that teacher education graduates will be evaluated at an acceptable level (Wise & Leibbrand, 2001).

With the comprehensive process of development and complete alignment to standards, ETS ensures the validity of the Praxis Series of assessments indicating, “the main source of validity evidence for licensure tests come from the alignment between what the profession defines as knowledge and/or skills important for safe and effective practice and the content of the test” (Educational Testing Services, 2010, p. 15). Reliability measures for the “Praxis MC total, category, and equating scores are computed using the Kuder and Richardson formula 20 (KR 20)” (Educational Testing Services, 2010, p. 39). The Praxis Series assessments meet the requirements for validity and reliability as set forth by the Consortium for Policy Research in Education (Odden, 2000).

Departments of education across the nation rely on the Praxis II and other standardized testing measures to certify teachers. Universities incorporate standardized assessments and other measures into their programs to ensure quality future educators and teacher education programs

(Castle et al., 2007; Goodman, Arbona, & De Rameriz, 2008). Goodman et al. (2008) researched the relationship between their university-administered Professional Attributes Questionnaire (PAQ), the state-required Pedagogy and Professional Responsibilities Assessment (PPR), and the standardized Generalist Comprehensive Exam, as well as the Teacher Performance Portfolio from the university. Results indicated that there was a statistically significant relationship between the scores teacher candidates received on their Teacher Performance Portfolios, their PAQ, and the state-required PPR assessment. There was also a positive, significant correlation between the PAQ and the standardized assessment, the Generalist Comprehensive Exam (Goodman et al., 2008).

A variety of studies have been carried out to determine potential predictors of Praxis II test scores. J. Brown, L. Brown, and C. Brown (2008) conducted a research study examining predictors of teacher education students' scores on the Praxis II Fundamental Subjects: Content Knowledge assessment. They found that after reviewing Scholastic Aptitude Test (SAT) scores, Praxis I scores, and Quality Point Averages (QPA), the SAT score was the one statistically significant predictor of the Praxis II score. The research by Angrist and Guryan (2004) indicated that grades are not highly correlated with Praxis II pass rates. Those candidates that are more likely to pass have been prepared through a teacher-education background rather than through an alternate certification route. In addition, they found that those pre-service teachers that attended a NCATE accredited teacher-education program are more likely to pass the Praxis Series assessment. Similar research (Gitomer & Latham, 1999; Gitomer, Latham, & Ziomek, 1999) concurs with these results.

Although a number of researchers support the use of standardized testing for teacher licensure, some distrust the exclusive use of these assessments like the Praxis Series to identify

effective teachers (Melnick & Pullin, 2002; Popham, 1999). Wise and Leibbrand (2001) doubt the process of teacher licensure. They believe that set standards have not been established; therefore licensure examinations would not be reliable across different state licensure systems. Issues have been brought up and specified with regards to the reliability and validity evidence related to state cut-off score decisions and defensibility of methods for setting licensure test pass-fail standards (Berk, 1999). Berk (1999) questioned the predictability of licensure tests to teaching performance. He expressed concern for certification standards, by themselves, and with other predictors such as SAT, ACT, Praxis I, college admission criteria, and other basic skills screening tools. Thobega and Miller (2008) performed a study utilizing existing college academic measures and the Praxis II: Agricultural Content (AgC) examination. They found that students “Agricultural GPA did not explain significant variability in AgC scores” (p. 99). In addition, they found a disparity existed between the content area presented within the licensure test and their program. Recommendations made by Thobega and Miller (2008) were to align coursework content with the content area licensure test to ensure appropriate subject area assessments for teacher licensure.

Several research studies focus on specific groups of pre-service teachers and their assessment scores on the Praxis II certification test. In a study conducted by Gitomer et al. (1999), a pass rate of 91% of Caucasian students was reported, in contrast with 69% for black students and only 59% for Hispanic students. Angrist and Guryan (2004) concurred; they found black and Hispanic applicants less likely to pass the Praxis II assessment. A follow up study by Gitomer (2007) compared the Praxis II test scores of a group of perspective teachers from 1994 to 1997 with a group of perspective teachers from 2002 to 2005. Results indicated that pass rates decreased for both male and female groups and all racial/ethnic groups assessed, with the largest

decrease by African Americans (Gitomer, 2007). Thobega and Miller (2008) agree finding males scored higher than females on the Praxis II: Agricultural Content (AgC) examination. In contrast, Gitomer (2007) presented that the entire academic profile of the teaching candidate pool, including all gender/racial/ethnic groups, has improved over the last decade. With the changes in policies at the state and national levels, Gitomer (2007) provided the possible explanation for the decrease and discrepancy of the Praxis II test scores as caused by the increase in certification passing requirements; this consideration seems yet to be validated.

While PDS programs have been evaluated utilizing a variety of methods, few were found with Praxis II as the measuring tool. Wright (2009) conducted a quantitative study and found no significant relationship between student teachers' Praxis II test scores, student teacher evaluation scores, and senior exit interview scores for PDS participants. Noted was the likelihood that the suspected value of PDS is not aligned with standardized testing, such as the Praxis II (Wright, 2009). With Praxis II as the widely used method of assessing candidates for licensure, more research needs to be completed to find out how PDS programs align with these standardized certification tests.

### **Performance-based Teacher Evaluation**

With the Blueprint for Reform continuing the call for highly effective teachers, states have had to continue to review how they evaluate teachers. A number of states have and are beginning to explore instituting a performance-based assessment system, which may or may not include the Praxis II assessment. Performance assessment continuums have been developed utilizing a number of sources including student teaching grades, course assessments, grade point averages, and oral and written senior level comprehensive examinations, in addition to the Praxis II: Principles of Learning and Teaching (Vaughn & Everhart, 2005). The Teacher Performance

Assessment Consortium (TPAC) has developed a performance-based common initial licensing assessment that will be available to be used nationwide by 2015 (Darling-Hammond, 2010).

The state of Texas utilizes a custom-designed assessment called the Texas Examination for Educator Standards (TExES) to determine a teacher's mastery of essential knowledge and skills for certification (Harrell, 2009). Louisiana uses the methodology of a value-added assessment system, "a type of data analytic tool that leverages longitudinal student data and the student-teacher linkage to examine the educational outcomes of students taught by individual teachers", to measure the impact of their teacher preparatory programs (Noell & Kowalski, 2010, p. 5). Harrell (2009) examined the relationship between the TExES certification test scores and three indicators of pre-service teacher content knowledge, "upper-level content area coursework, upper-level content area grade point averages (GPA), and time elapsed between the TExES content area examination and the completion of the last upper-level course in the content area" (pp. 65-66). Statistically significant correlations were discovered in both the upper-level content area GPA and TExES scores ( $p = .015$ ) and the time elapsed between the TExES assessment and the last upper-level content area course ( $p = .010$ ). This study, among others, provides evidence to support the use of multiple assessments to identify effective teachers.

### **Linking Teacher Licensure to Teacher Quality**

Some attempts have been made to link teacher licensure tests to student achievement. One such study attempted to estimate the impact of teacher licensing; results of this study indicated no clear evidence between teacher licensing on student achievement or teacher wages (Kleiner & Petree, 1988). An additional study utilized the Schools and Staffing Survey to estimate the effect licensure testing requirements have on teacher wages and teacher quality as measured by educational background. The results suggested that licensure testing is associated

with increased teacher pay, but no evidence was found of an increase in teacher quality (Angrist & Guryan, 2007). These two studies give an indication of uncertainty on the impact of teacher licensure test as a precursor to future teacher quality or increased student achievement.

### **P-12 Student Assessment Requirements**

The No Child Left Behind Act of 2001 (NCLB), which revised the Elementary and Secondary Act of 1965 (ESEA), provided legislation to ensure all public school students to the opportunity and means to achieve academic success. Key components of NCLB include:

- Accountability for results
- Expanded state and local flexibility
- Expanded school choices for parents
- Focused resources on proven educational methods, particularly in reading instruction
- Strengthening of teacher quality
- Confirmation of student academic progress and measurement of adequate yearly progress
- Promotion of English proficiency (Wiseman, Knight, & Cooner, 2005, p. 71).

In order to measure students' academic progress, the NCLB Act required that all states develop annual assessments based on their current standards and benchmarks. Implementation of these state assessments began during the 2005-2006 school year with annual assessments in grades 3-8 for reading and mathematics, in addition to the ESEA requirement of grade span assessments (3-5, 6-9, 10-12) for the same subject areas. During the 2007-2008 school year, grade span assessments in science were enacted (United States Department of Education). Data provided by the student state assessment was disaggregated by gender, race, ethnicity, poverty level, and limited English proficiencies in order to track the progress of the main goal of NCLB - to ensure that no child would be left behind.

Annual report cards detailed state grade level assessment data, in addition to data based upon disaggregated groups, to indicate the progress of schools and school districts on closing the achievement gap (United States Department of Education, 2002). NCLB required all schools, districts, local education agencies, and states to confirm that all P-12 students were meeting Adequate Yearly Progress (AYP). Individual states were required to create a definition and annual objectives to measure progress to meet AYP and ensure that all P-12 students reach proficiency within a 12 year period (United States Department of Education, 2002). Each school and school district was required to continually meet and/or exceed the targets of P-12 state assessments annual proficiency targets, P-12 state assessments participation rates, and attendance/graduation rates in order to meet AYP (Department of Elementary and Secondary Education, 2011). NCLB required annual proficiency targets to be met by all P-12 students and disaggregated subgroups by 2014.

Missouri's AYP targets were established by the Missouri Department of Elementary and Secondary Education based on a formula from the NCLB Act and an analysis of Missouri Assessment Program (MAP) data, attendance rate data and graduation rate data from prior years. When all targets are met, the requirements of AYP are met. Beginning with the 2008-2009 AYP determinations, Missouri was approved to implement a growth model for use in determining AYP. Growth model calculations were applied to 2006-2007, 2007-2008, 2008-2009, 2009-2010, and 2010-11 grade-level MAP and MAP-A data (Department of Elementary and Secondary Education, 2011, p. 1).

### **Linking PDS to Teacher Effectiveness and Student Achievement**

Licensure tests and many other multiple measures have been evaluated to determine teacher effectiveness. In a study to consider five techniques used to evaluate beginning teacher

quality and their effectiveness with special education students, Blanton, Sindelar, and Correa (2006) reviewed process-product measures, teacher evaluation checklists, standards, large-scale surveys, and commercially available observations. Providing anecdotal examples to demonstrate strengths and weaknesses of all five techniques, it was found that “the superiority of one model over another depends on the purpose and context of its use” (Blanton et al., 2006, p. 124).

Various studies considered measuring student outcomes to determine teacher quality. Many utilized multiple measures. Classroom observations are said to be more effective in understanding the range of student outcomes, but with observations come the inconsistencies of standard observational practices, time restraints, and small sample sizes (Kennedy, 1999). Kennedy (1999) described the difficulty linking student learning to teacher quality. She argued that standardized achievement tests fail to represent the complexity of student learning. Goldhaber (2007) finds positive relationship between licensure tests and student achievement. These results were conducted from a 10-year study with the North Carolina Education Research Data Center which utilizes the statewide data system to link teachers to their students over time. The study suggests that teachers utilizing the Praxis II Curriculum test who met the North Carolina licensure test standard were more effective in math instruction by approximately 6 percent of a standard deviation. The findings for reading were only marginally significant at about 2 percent of a standard deviation. This study suggests that the Praxis II Content test provides little evidence of predictability. Only the top quartile of performance on the Praxis II Content test was statistically significant in the area of mathematics (Goldhaber, 2007).

Outside factors are considered potential causal factors of decreased student achievement test scores, yet PDS programs can influence student achievement. Despite an ongoing collaborative professional development program, some students, “including some with less stable

home backgrounds, severe special educational needs, and very poor attendance, continue to experience difficulties” (Kennedy & Shiel, 2010, pp. 380-381). Goldhaber (2007) found that on state required assessments in reading and math, minorities (black and Hispanic), males, participants using the free and reduced-lunch program, participants whose parents have less education, and students with disabilities were outperformed by their reference groups. With this stated, Wong and Glass (2005) affirmed that PDS collaborations with individualized attention and small group instruction can benefit low-achieving students. Pre/post diagnostic grade level readiness test scores and responses to teachers’ written evaluations showed considerable gains in concepts and skills being taught by PDS candidates.

A small number of studies can be found that linked PDS to student achievement. Kennedy and Shiel (2010) studied the impact a collaborative professional development program had on student achievement in literacy. Student writing samples and results of an early literacy screening test were collected over a period of two school years. The study found a significant increase in reading and spelling assessment scores on the standardized early literacy test, with improvements also detected on the non-standardized student writing samples (Kennedy & Shiel, 2010). The Equity Network, a group of twelve PDS programs serving in five districts within the Sacramento, California area, examined pupil achievement within all of the Network schools. SAT 9 standardized assessment data, pre/post diagnostic grade level readiness tests, and teachers’ written evaluations of the collaborations, among other data were evaluated. All Network schools made gains during the period of the study scores on the SAT 9 assessment, although these were deemed unreliable. Assessment scores on the SAT 9 fluctuated depending on grade and subject area with no apparent pattern, thus the consideration was made that the intervention of PDS was too preliminary to have made significant change (Wong & Glass, 2005).

Pre/post diagnostic grade level readiness tests did show considerable gains when evaluating the PDS's on-site tutoring program. PDS candidates provided one-on-one tutoring to third and fourth grade students with average gains from 9-29% (Wong & Glass, 2005). Castle, Arends, and Rockwood (2008) conducted a comparative study between a PDS school and a non-PDS school matched on achievement and demographic variables over a 6-year period. The Connecticut Mastery Test (CMT) student achievement results, PDS development descriptions and standards, and the PDS Standards Student Learning Pyramid were utilized to compare schools. Results indicated "the PDS school increased the percentage of students at mastery and decreased the percentage of students at intervention to a greater extent than the control school on 75% of the comparisons" (Castle et al., 2008, p. 9). An evaluation of the PDS Standards Student Learning Pyramid, Castle et al. (2008) detected that as collaboration, cooperative research projects, and school-based professional development increased, student achievement increased in the PDS.

Efforts to increase public school districts achievement scores has not been the only goal when entering into a PDS partnership. A K-16 renewal model was implemented with Kansas State University (KSU) and local school districts within the region as a PDS partnership project. The goals of the partnership, which included the KSU teacher education and 21 PDS schools, was to improve both K-12 teaching and learning while also improving the university teacher preparatory program (Shroyer, Yahnke, Bennett, & Dunn, 2007). Positive impacts were measured and found in both the teacher education program and the K-12 PDSs. The KSU teacher preparatory program created performance-based teacher education standards, aligned and added new courses to their existing program, collaborated extensively with PDS school partners, in addition to faculty in various divisions on campus. Practicing teachers in PDS schools

attitudes and practices changed as a result of the partnership and all 21 schools showed gains in student achievement from 2000 to 2005 in the areas of reading, math, social studies, or science. (Shroyer et al., 2007). Cantor and Schaar (2005) researched a PDS program for non-credentialed university education students currently teaching within the urban Los Angeles setting. Along with meeting goals of the teacher education program of increasing instructional proficiency of new teachers and retaining proficient teachers in inner city schools, researchers found that K – 5 student SAT 9 test and student writing sample scores increased for all PDS teachers over control group teachers (Cantor & Schaar, 2005). With the joint collaboration of practicing teachers, pre-service teachers, and faculty members across the university system the reform effort of teacher education and public education continues to move forward.

### **Summary**

This literature review provided research and a historical perspective of the PDS program. The theory of situated learning and model of community of practice was explained and connected to the PDS and traditional pre-service teacher education programs. Research was provided on both the influence and the critics of PDS and comparisons were made between PDS and traditional programs. Characteristics and competence levels of pre-service teachers and new teachers was discussed, as well as teacher certification requirements of all new teachers. A description and review of literature to address the Praxis II assessments was presented, followed by a number of studies reviewing pre-service teachers using performance-based assessments and how teacher licensure can or cannot be linked to teacher quality. Finally, an examination of the literature and requirements of P-12 state assessments was provided and the extent in which these assessments are connected to the overall field of education and the PDS model of education.

The next chapter will provide the methodology and present the specific approach the researcher followed to determine the purpose of this research study: to determine if there is a difference between the promise and effectiveness of pre-service teachers in the professional development school versus a traditional school model within Macon University.

## **Chapter 3**

### **METHODOLOGY**

Chapter three provides an overview of the methodology of the research study. This chapter provides a rationale of the quantitative approach and the philosophical assumptions utilized within the scope of the study. An overview of the causal comparative study is included and how a causal comparative study relates to the research questions of this study. Specific research questions and variables are highlighted. Population, sample, and sample size are addressed, in addition to the necessary instrumentation and data analysis procedures of the study. Chapter three concludes with a discussion on limitations and delimitations of the research study.

#### **Methodological Approach**

This study relies on the quantitative approach to research the promise and effectiveness of pre-service teachers. According to Fraenkel and Wallen (2009), quantitative researchers seek to establish relationships between variables, looking for and sometimes explaining the cause of these relationships. In the context of this study, the variable of the professional development school was analyzed to determine causation of promise and effectiveness in pre-service teachers and their students' achievement as measured by the Praxis II certification tests and the Missouri Assessment Program (MAP) state assessment scores. Comparable to other quantitative research, this study utilized data to assess the hypothesized relationships among all indicated variables (Kathwohl, 1998). The researcher in this study was a detached observer, working with pre-established steps to ascertain generalizations that may transcend the immediate study or situation (Fraenkel & Wallen, 2009).

The quantitative approach is associated with the positivist philosophical assumption. This view represents the traditional form of research (Creswell, 2009). Researchers following

this philosophical assumption believe causes determine effects or outcomes. Thus, the researcher suggests PDS programs cause a difference in the outcome of the Praxis II test scores and the first year teachers' student achievement on the MAP state assessment. Studying numeric measures are fundamental to test, verify, or refine theories that govern the world (Creswell, 2009). Through the collection of data and evidence, researchers develop statements of truth; statements that can elucidate a situation or describe a causal relationship (Phillips & Burbules, 2000). This study provided an avenue to determine if there was causal relationship between the PDS program and the pre-service teachers score on the Praxis II test and the student achievement of their students during their first year teaching.

A causal comparative study is utilized to attempt to determine causality of differences that currently exist between or among groups (Fraenkel & Wallen, 2009). The researcher of this study examined two types of pre-service teacher education models, PDS and traditional, and attempted to establish the outcome of this difference. The differences between the groups, PDS and traditional, had previously occurred and effects were studied in retrospect. Due to the constraints of utilizing previously assigned groups, background characteristics were obtained to control for the effect on individual differences between the pre-service teacher groups (Fraenkel & Wallen, 2009). Specific subject characteristics of age, gender, grade point average, and CBASE English composite score were considered. Thus, this research study explored two effects of participation in either the PDS or the traditional pre-service teacher education model. The first, more direct effect was on the teacher education candidate: his or her Praxis II test score. The second, and more indirect effect, was on the first year teacher and his or her students' achievement test scores.

### **Purpose and Research Questions**

The following includes a restatement of the purpose and the specific research questions utilized within this research study:

The purpose of this causal comparative study was to determine if there is a relationship between the promise and effectiveness of pre-service teachers in the professional development school versus a traditional school model within Macon University. Promise was measured by aspiring teachers' Praxis II tests and effectiveness was measured by their students' MAP state assessment scores.

Based on the purpose of this study, the following research questions were addressed:

1. Is there a difference between PDS and traditional pre-service teachers on the demographic characteristics of age, gender, undergraduate grade point average (GPA), and CBASE English composite score?
2. Is there a difference between PDS and traditional pre-service teachers on their overall Praxis II Test score ("promise")?
3. Is there a difference between PDS and traditional pre-service teachers on the percentage of their students scoring proficient and non-proficient on the MAP test ("effectiveness") in a) communication arts and b) mathematics during their first year teaching?

### **Participants and Sampling**

This study used existing data from the following sources: Macon University's data collection system and the assessment reporting systems of a subsample of nine school districts. Data obtained for the study includes scores of graduates of Macon University who taught in the participating district during their first year teaching. Macon University and the participating

school districts that employed teachers that qualified for the study have agreed to participate and submitted a consent letter approved by the Institutional Review Board (IRB).

Teachers qualifying for the study were recruited from a list of alumni within the School of Education at Macon University beginning the 2006-2007 and ending the 2009-2011 academic years. Each teacher took the Praxis II: Elementary Education: Curriculum, Instruction, and Assessment, Test Code 10011, and taught in one of the participating school districts in grades third through eighth during their first year teaching. This study only included regular classroom teachers due to the process of the Missouri Department of Elementary and Secondary Education (DESE) MAP test reporting system; no special education or pre-school through second grade teachers qualified as the MAP test is not given before third grade and special education students test scores are integrated into the regular education classrooms.

Variables included within the study were type of pre-service teacher education program (PDS or traditional), Praxis II: Elementary Education: Curriculum, Instruction, and Assessment, Test Code 10011, overall score and the percentage of students scoring proficient and non-proficient by class on the MAP (communication arts and mathematics). Student MAP test scores were reported as a percentage of students scoring at each proficiency level by class, with no teacher names or student names attached. MAP test scores were reported only to the researcher for the sole purpose of conducting this study.

The two sample groups included participants from a list of 251 alumni of Macon University within the School of Education. The two groups were delineated by type of pre-service teacher education program (PDS or traditional). Individual pre-service teachers specifically chose their teacher education program route. Both PDS and traditional pre-service teacher candidates filled the same student teaching application. In addition, PDS participants

completed an additional application indicating their intent to participate in the PDS program and their district preference of PDS site. No further screening criterion was required at Macon University for PDS participants.

A minimum of 30 participants per group is necessary for a causal comparative study in order to attempt to determine a cause or accurately estimate a degree of relationship between variables (Fraenkel & Wallen, 2009; Pallant, 2010). By utilizing the suggested number of participants, the researcher would be able to evaluate the PDS and traditional teacher education programs within Macon University participating in this study with 60 out of 251 graduates (approximately 24%) in the School of Education program.

In order to minimize extraneous variables within the sample groups, data were collected from one teacher preparation program and participating school districts within a 40 mile radius of a Missouri metropolitan area. Within the districts examined for the study, three are considered urban, two suburban, and four rural. P – 12 student enrollments range from approximately 2,280 to 13,670 with the majority falling in the 2,500 – 5,000 enrollment range. Student demographics vary from district to district. Seven out of the nine districts examined have a Caucasian student population of 70% or higher with Black and Hispanic students populations relatively evenly distributed with the remaining percentage of students. A small population (two percent or below) of Asian and Indian students are enrolled in all of the districts examined. District-wide free and reduced lunch percentages range from 19.8% to 71.4% with over half of the districts examined subsidizing within the 50%-75% of the P – 12 student population qualifying for some form of free or reduced lunch. The information provided regarding district variance is summarized in the limitations section of this study.

In addition, the differences between the two groups, PDS and traditional, was examined in order to describe and clarify any other possible extraneous variables. Background characteristics were obtained and are presented based on to age, gender, grade point average, and CBASE English composite score. These background characteristics are presented in the findings of this study.

### **Data Collection Procedures**

Data were collected using existing records from Macon University's data collection system and the participating school district's assessment reporting systems. The study was approved by the University Internal Review Board prior to collection of data. Macon University and all participating districts submitted written consent to participate if they agreed to share Praxis II or district assessment data, respectively. Potential participating districts were contacted verbally and by email to inquire about participation in the study. Once all participating districts provided consent, data collection began by identify age, gender, GPA, CBASE English composite score, and Praxis II test scores from Macon University and MAP assessment data from all participating districts. No P-12 teacher names or student names were utilized for the study. Data were input by the researcher into the Statistical Package for the Social Sciences Program (SPSS) and analyzed according to the appropriate process for each research question.

### **Data Analysis Procedures**

The following indicates the specific approach the researcher utilized for data analysis aligned to each research question. The analyses for research questions 1 and 2 were repeated twice; first on the results from a subsample of nine school districts and again on the data from all graduates (2007-2011).

To make comparisons of the selected groups, PDS pre-service teachers and traditional pre-service teachers, background characteristics were taken into consideration. Research Question 1: Is there a difference between PDS and traditional pre-service teachers on demographic characteristics of age, gender, undergraduate GPA, and CBASE English composite score? addressed the need to reduce the chance of subject characteristic threat to internal validity (Fraenkel & Wallen, 2009). In order for groups to be more equivalent, the researcher restricted the homogeneous groups based on the variables of age, gender, GPA, and CBASE English composite score. The process of evaluating these characteristics was to determine if there was a threat to internal validity. Descriptive analysis was utilized and a summary of statistics has been provided for each group, PDS and traditional, by factors of age, gender, GPA, and CBASE English composite score.

In addition to the descriptive and summary statistics presented, the researcher utilized a *t*-test for independent means to compare the means of the PDS and traditional models based on age, GPA, and CBASE English composite score. The purpose of this analysis was to determine whether the means of the two groups based on age, GPA, and CBASE English composite score was significantly different (Fraenkel & Wallen, 2009). The comparison of the categorical variable, gender, was evaluated by a chi-square, using kind of education (PDS or traditional) as the dependent variable and gender as the independent variable. A chi-square test is a comparison of expected frequencies and actual, obtained frequencies; if these frequencies are similar, the researcher can conclude that the groups are similar (Fraenkel & Wallen, 2009). Any differences between the PDS and the traditional groups were noted within the limitations of the study.

Descriptive statistics to analyze and summarize each group of pre-service teacher, PDS and traditional, has been provided for overall Praxis II test scores. In addition, the researcher

conducted a *t*-test for independent means for the dependent variable, overall score, to address Question 2: Is there a difference between PDS and traditional pre-service teachers on their overall Praxis II Test scores (“promise”)? The researcher was investigating to see if there was a statistically significant difference between the kind of pre-service teacher, PDS or traditional on the Praxis II test (Fraenkel & Wallen, 2009). Praxis II test scores utilized for all participants were the first attempt of the certification assessment. Total possible test scores range from 100 – 200 for total scores. Math and language arts are subsets of the overall test scores and were not analyzed individually for this specific study.

Descriptive statistics to analyze and summarize each kind of pre-service teacher group, PDS and traditional, has been provided utilizing the percent of students scoring below basic, basic, proficient and advanced on the MAP test in each area, communication arts and mathematics. The MAP test scores were grouped into two categories, non-proficient (below basic and basic) and proficient (proficient and advanced), and included the percent of students scoring at each level for every class analyzed within the study. The researcher compared the expected frequency (50/50) to the actual, obtained frequency of the pre-service teacher groups, PDS and traditional, within the categories of non-proficient (below basic and basic) and proficient (proficient and advanced) to conduct a chi-square test for independent means for Question 3: Is there a difference between PDS and traditional pre-service teachers on the percentage of students scoring proficient and non-proficient on the MAP test (“effectiveness”) in a) communication arts and b) mathematics during their first year teaching? (Fraenkel & Wallen, 2009). Data has be analyzed to find out if there was a significant difference between the kind of undergraduate student, PDS or traditional, and the percentage of students scoring proficient and non-proficient on the MAP test in a) communication arts and b) mathematics during their first

year teaching. MAP test data were obtained from the school districts that agreed to participate in the study.

### **Limitations**

Although background characteristics were obtained to control for the effect on individual differences between the pre-service teacher groups, these groups were previously established. Manipulation of the independent variable occurred through participant self-selection. This self-selection process creates a limitation to the study (Fraenkel & Wallen, 2009). Another limitation to the study pertains to the type of preparation for the MAP tests. Individual teachers provide a unique style within their own classroom; the amount of preparation for the MAP test could vary from class to class or district to district. Additionally, there is a lack of control based on individual student preparation outside the classroom. A wide variation of P – 12 student demographics should be considered a limitation. In order to consider the range of student preparation, ability levels and variation of demographics, a percentage of students scoring at proficiency level was utilized for this study.

### **Delimitations**

Delimitations include factors within the researcher's control. Several factors fall under this category. Delimitations for all participants include: attended the same university, graduated with a Bachelors of Arts in Elementary Education, took the same Praxis II exam, and proctored the MAP tests for their class during the spring semester of their first year teaching.

## **Chapter 4**

### **ANALYSIS OF DATA**

Chapter four provides an overview of the statistical methodologies used to address the research questions. This chapter begins with a restatement of the purpose followed by a systematic examination of the specific research questions for this study, as described in earlier chapters. The hypotheses associated with each question are presented, the statistical methods used to evaluate the hypotheses are described, the results of the analyses are reported, and decisions regarding the hypotheses are made. Chapter four concludes with calculations of effect size and power, and a brief summary of the main findings.

#### **Restatement of Purpose**

The purpose of this study was to determine if there was a relationship between the “promise” and “effectiveness” of pre-service teachers in the professional development school (PDS) versus a traditional school model within Macon University. Promise was measured by aspiring teachers’ Praxis II tests and effectiveness was measured by their students’ MAP state assessment scores.

#### **Statistical Methodology**

The data analysis procedures for this study have previously been described in detail in Chapter three. Table 4.1 provides a summary of the research questions and the methodologies used to address them. The analyses for research questions 1 and 2 were repeated twice; first on the results from a subsample of nine school districts and again on the data from all graduates (2007-2011).

Table 4.1

Summary of the research questions and statistical analyses used in this study

Research Question	Statistical Analysis
<p><b>Research Question 1</b></p> <p>Is there a difference between PDS and traditional pre-service teachers on the demographic characteristics of age, gender, undergraduate GPA, and CBASE English composite score?</p>	<p>Descriptive statistics</p> <p>Three <i>t</i>-tests for independent means (age, GPA, and CBASE English composite score)</p> <p>Fisher's Exact Test (gender)</p>
<p><b>Research Question 2</b></p> <p>Is there a difference between PDS and traditional pre-service teachers on their overall Praxis II Test score ("promise")?</p>	<p>Descriptive statistics</p> <p><i>t</i>-test for independent means (Praxis II Composite scores)</p>
<p><b>Research Question 3</b></p> <p>Is there a difference between PDS and traditional pre-service teachers on the percentage of their students scoring non-proficient and proficient on the MAP test ("effectiveness") in a) communication arts and b) mathematics during their first year teaching?</p>	<p>Descriptive statistics</p> <p>Mann-Whitney U tests for independent means for Communication Arts and Mathematics (Proficient and Non-Proficient)</p>

Statistical analyses of the research questions were conducted using SPSS v.20 (IBM Corp., 2011). An alpha level of 0.05 was used as a decision point for statistical significance. A discussion of effect size and power is presented at the end of this chapter. Cohen's *d* was calculated as a measure of effect size, using G\*Power v. 3.1.3 (Faul, Erdfelder, Lang, & Buchner, 2007). Post-hoc power analyses and future sample size considerations were also conducted using G\*Power.

## Results

### Research Question 1

Research Question 1 (RQ1): Is there a difference between PDS and traditional pre-service teachers on the demographic characteristics of age, gender, undergraduate grade point average (GPA), and College Basic Academic Subjects Examination (CBASE) English composite score?

Hypothesis for Research Question #1 ( $H_0^1$ ): There is no significant difference between the pre-service teachers practicing within a PDS model and the pre-service teachers practicing within a traditional model on the demographic characteristics of age, gender, undergraduate GPA, and CBASE English composite score.

RQ1 addressed using descriptive statistics, independent-samples *t*-tests and a Fisher's exact test. Descriptive statistics of mean, standard deviation, and the minimum and maximum scores (range) were used to summarize each background variable that was recorded at a continuous level of measurement (age, GPA, CBASE English score). The statistics were calculated for the total sample and for the subgroups of PDS and traditional pre-service teachers. For the categorical variable of gender, frequency and percentages of males and females in the sample and subgroups were tabulated.

Independent-samples *t*-tests were used to compare the means of the PDS and traditional teachers based on age, GPA, and CBASE English composite score. The purpose of this analysis was to determine whether the means of the two groups with regard to age, GPA, and ACT score were significantly different. First, Levene's test of homogeneity of variance was evaluated. If this test was not significant, the standard independent samples *t*-test was used. If Levene's test was significant at  $p < .05$ , this indicated violation of the equality of variance assumption between the two groups. In this circumstance, the results of the unequal-variance *t*-test were reported.

The comparison of the categorical variable, gender, was evaluated by a Fisher's exact test. This was used rather than the chi-square test of independence due to the small number of

males in the sample. Exact tests enable one to obtain accurate results from small datasets or unbalanced tables, when the data fail to meet the underlying assumptions of the standard asymptotic method (IBM Corp., 2011). The exact significance level gives the probability of an observed outcome, or an outcome more extreme, calculated exactly. The Fisher's exact test (FET) is used for two nominal variables, and evaluates whether the relative proportions of one variable (e.g., gender) are independent of the second variable (e.g., PDS or traditional model) (McDonald, 2009).

### Subsample of Nine School Districts

The subsample of nine school districts for RQ1 consisted of 115 pre-service teachers from nine school districts. The largest percentage from one school district was 37.4% ( $n = 43$ ) and the smallest percentage was 0.9% ( $n = 1$ ). There were 52 pre-service teachers practicing within a PDS model (45.2%) and 63 teachers practicing within a traditional model (54.8%) in the sample. Table 4.2 shows the characteristics of the PDS, traditional, and total samples in terms of gender, age, GPA and CBASE English composite scores.

*Table 4.2*  
*Comparison of background characteristics of PDS and traditional samples for nine school districts*

		Total ( $N = 115$ )	PDS ( $n = 52$ )	Traditional ( $n = 63$ )	Statistical Comparison
Gender	Female: $N$ (%)	109 (94.8%)	51 (98.1%)	58 (92.1%)	FET Sig. = .219 <sup>a</sup>
	Male: $N$ (%)	6 (5.2%)	1 (1.9%)	5 (7.9%)	
Age	$M$	30.61	30.35	30.83	$t(113) = -0.333$ , $p = .740$
	$SD$	7.66	8.11	7.32	
	Range	21 – 52	21 – 52	22 – 51	
GPA	$M$	3.44	3.48	3.40	$t(89.9) = 1.461$ , $p = .147$ <sup>b</sup>
	$SD$	0.31	0.36	0.26	
	Range	2.63 – 4.00	2.63 – 4.00	2.78 – 4.00	

		Total ( <i>N</i> = 115)	PDS ( <i>n</i> = 52)	Traditional ( <i>n</i> = 63)	Statistical Comparison
CBASE	<i>M</i>	287.07	286.29	287.71	<i>t</i> (113) = -0.185, <i>p</i> = .853
English	<i>SD</i>	40.89	41.73	40.51	
composite	Range	235 – 401	235 – 401	235 – 399	

Note. FET = Fisher's Exact Test. <sup>a</sup>Exact significance (2-sided). <sup>b</sup> Results of unequal-variance *t* test are reported due to significant violation of homogeneity of variance assumption.

There were 109 females in the total sample (94.8%). The PDS group was 98.1% female, and the composition of the traditional pre-service group was 92.1% females. The gender distribution did not differ by type of school model, Fisher's Exact Test Sig. = .219.

The average age of participants was 30.61 years (*SD* = 7.66), with a range between 21 and 52 years. The average of the PDS participants was 30.35 years (*SD* = 8.11 years). This did not differ from the average age of traditional pre-service teachers in the sample (30.83 years, *SD* = 7.32 years), *t* (113) = -0.333, *p* = .740.

The mean GPA was 3.44 (*SD* = 0.31), with a range of 2.63 to 4.00. PDS participants had an average GPA of 3.48 (*SD* = 0.36) and traditional participants had an average GPA of 3.40 (*SD* = 0.26). Levene's test for Equality of Variances was statistically significant (*F* = 8.496, *p* = .004), indicating unequal variances in the two groups. Thus, the unequal variance *t*-test was employed. There were no difference in the mean GPA between PDS and traditional pre-service teachers, *t* (89.9) = 1.461, *p* = .147.

The average CBASE English composite score in the total sample was 287.07 (*SD* = 40.89), with a range from 235 to 401. In the PDS sample, the average score was 286.29 (*SD* = 41.73) and in the traditional sample, the average was 287.71 (*SD* = 40.51). There was no significant difference between the two samples in their average CBASE English composite scores, *t* (113) = 0.185, *p* = .853.

In summary, there was insufficient evidence to reject the null hypothesis for RQ1, when the data from the nine school districts was evaluated. The pre-service teachers practicing within a PDS model and the pre-service teachers practicing within a traditional model did not differ in terms of gender distribution, average age, GPA or CBASE English composite score.

### All Graduates

The sample of all graduates consisted of 270 pre-service teachers; 81 (30%) from the PDS model and 189 (70%) from the traditional model. The descriptive statistics for the total sample, PDS and traditional groups are shown in Table 4.3.

*Table 4. 3  
Comparison of background characteristics of PDS and traditional samples for all graduates*

		Total ( <i>N</i> = 270)	PDS ( <i>n</i> = 81)	Traditional ( <i>n</i> = 189)	Statistical Comparison
Gender	Female: <i>N</i> (%)	244 (90.4%)	80 (98.8%)	164 (86.8%)	FET <i>Sig.</i> = .001 <sup>a</sup>
	Male: <i>N</i> (%)	26 (9.6%)	1 (1.2%)	25 (13.2%)	
Age	<i>M</i>	32.26	31.40	32.63	<i>t</i> (268) = -1.043, <i>p</i> = .298
	<i>SD</i>	8.95	8.73	9.05	
	Range	21 – 63	21 – 59	21 – 63	
GPA	<i>M</i>	3.41	3.46	3.38	<i>t</i> (268) = 1.879, <i>p</i> = .061
	<i>SD</i>	0.32	0.34	0.31	
	Range	2.59 – 4.00	2.63 – 4.00	2.50 – 4.00	
CBASE English composite	<i>M</i>	285.09	288.38	283.67	<i>t</i> (268) = 0.868, <i>p</i> = .386
	<i>SD</i>	40.86	42.71	40.07	
	Range	235 – 412	235 – 401	235 – 412	

Note. FET = Fisher's Exact Test. <sup>a</sup>Exact significance (2-sided).

There were 244 females (90.4%) and 26 males (9.6%) in the total sample. For the PDS group, 98.8% were female and only one 1 PDS participants was male (1.2%). For the traditional sample, 86.8% were female and 13.2% were male. There was a significant difference in the

gender distribution of the PDS and traditional groups, with the traditional group having proportionately more males than the PDS group, Fisher's Exact Test Sig. = .001.

The average age of participants was 32.26 years ( $SD = 8.95$  years), with a range from 21 to 63 years. In the PDS sample, the average age was 31.40 years ( $SD = 8.73$  years) and in the traditional sample, the average age was 32.63 years ( $SD = 9.05$  years). There was no statistically significant difference in the mean ages of the PDS and traditional samples,  $t(268) = -1.043$ ,  $p = .298$ .

The mean GPA for all graduates was 3.41 ( $SD = 0.32$ ). In the PDS sample, the average GPA was 3.46 ( $SD = 0.34$ ) and in the traditional sample the average GPA was 3.38 ( $SD = 0.31$ ). The difference between the mean GPA in the PDS and traditional samples was not statistically significant  $t(268) = 1.879$ ,  $p = .061$ . However, the data showed a non-significant trend towards a higher average GPA in the PDS group than the traditional sample.

The average CBASE English composite score in all graduates was 285.09 ( $SD = 40.86$ ). The average in the PDS sample was 288.38 ( $SD = 42.71$ ) and the average in the traditional sample was 283.67 ( $SD = 40.07$ ). The difference between the means was not statistically significant,  $t(268) = 0.868$ ,  $p = .386$ .

In summary, a significant difference in gender distribution was observed when all graduates were examined. There were proportionately more males within the traditional program than the PDS program. The average age, GPA, and CBASE English composite scores did not differ between PDS and traditional pre-service teachers.

## **Research Question 2**

Research Question 2 (RQ2): Is there a difference between PDS and traditional pre-service teachers on their overall Praxis II Test score (“promise”)?

Hypothesis for Research Question #2 ( $H_0^2$ ): There is no significant difference between the pre-service teachers practicing within a PDS model and the pre-service teachers practicing within a traditional model on the Praxis II test.

The hypothesis associated with RQ2 was addressed using descriptive statistics and independent samples  $t$ -tests. The descriptive statistics of mean, standard deviation, and minimum and maximum scores (range) were calculated to characterize the Praxis II Composite scores in the total sample, PDS group and traditional group for both the subgroup of nine school districts and all graduates. Distribution histograms were created to provide visualization of the distribution of scores within each group. Independent samples  $t$ -test were employed to determine whether the mean Praxis II Composite score differed in PDS and traditional pre-service teachers. Finally, error bar charts were created depicting the 95% confidence interval of the mean for each group.

### **Subsample of Nine School Districts**

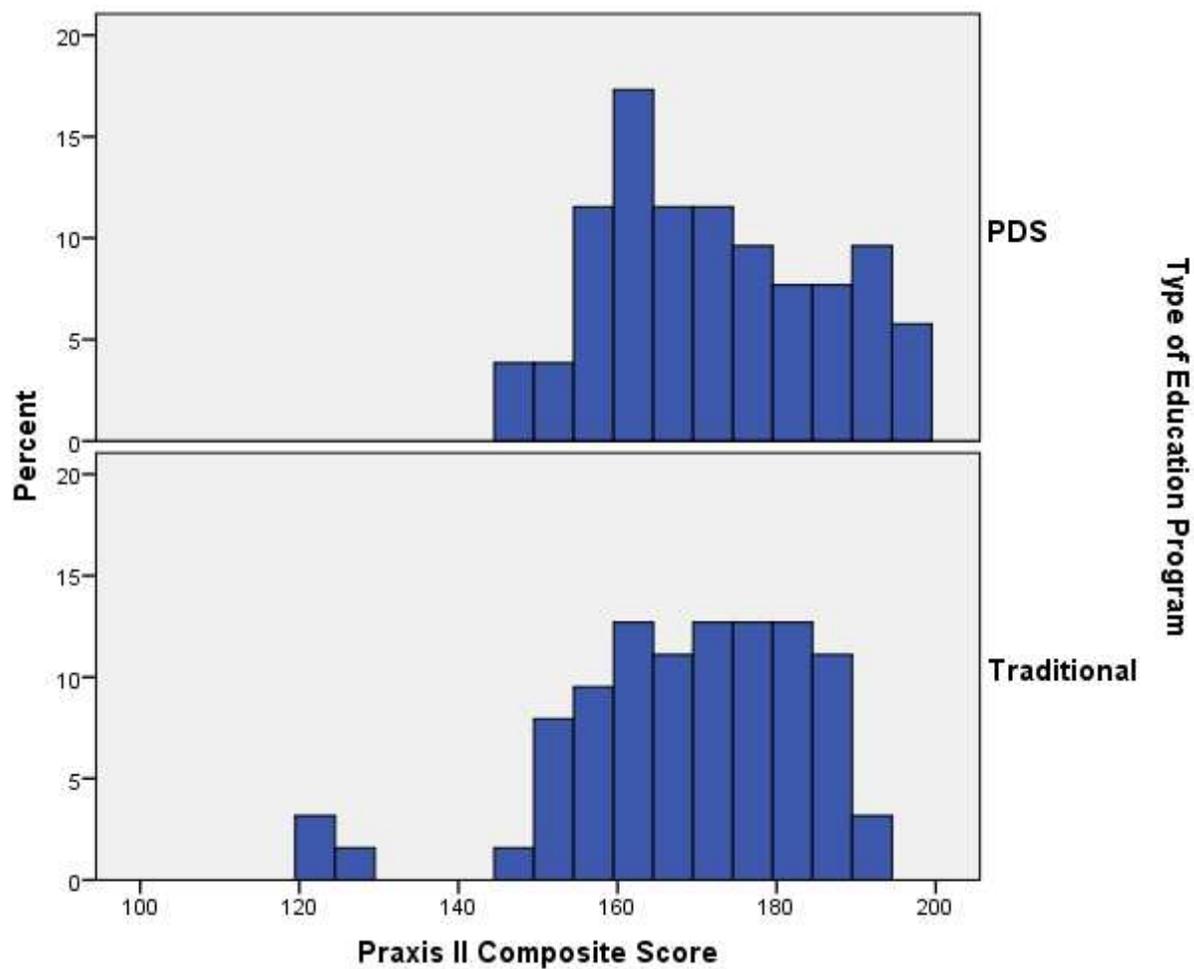
The descriptive statistics for the Praxis II Composite scores in the subsample of nine school districts in the total, PDS, and traditional samples are shown in Table 4.4. The average Praxis II Composite Score in the total sample was 170.24 ( $SD = 14.57$ ), with scores ranging from 122 to 198. The mean score in the PDS sample was 171.90 ( $SD = 13.66$ ) and in the traditional sample, the mean was 168.87 ( $SD = 15.25$ ). This difference was not statistically significant,  $t(113) = 1.112, p = .269$ .

The distribution histograms of scores in the PDS and traditional samples are shown in Figure 4.1. As seen in the figure, the distributions of scores in both groups appeared fairly overlapping, with the exception of a few low scoring outliers in the traditional group. Finally, the error bar charts depicting the means and 95% confidence intervals for each group are shown in

Figure 4.2. The confidence intervals were significantly overlapping. Removal of the few outliers observed in Figure 4.1 would result in bringing the mean of the traditional group even closer toward the mean of the PDS group.

*Table 4. 4*  
*Comparison of Praxis II Composite Scores in PDS and traditional samples for nine school districts*

		Total ( <i>N</i> = 115)	PDS ( <i>n</i> = 52)	Traditional ( <i>n</i> = 63)	Statistical Comparison
Praxis II	<i>M</i>	170.24	171.90	168.87	<i>t</i> (113) =
Composite	<i>SD</i>	14.57	13.66	15.25	1.112, <i>p</i> = .269
Score	Range	122 – 198	147 – 198	122 – 191	



*Figure 4. 1*  
*Distribution histograms of Praxis II Composite Scores for PDS and traditional samples in nine school districts.*

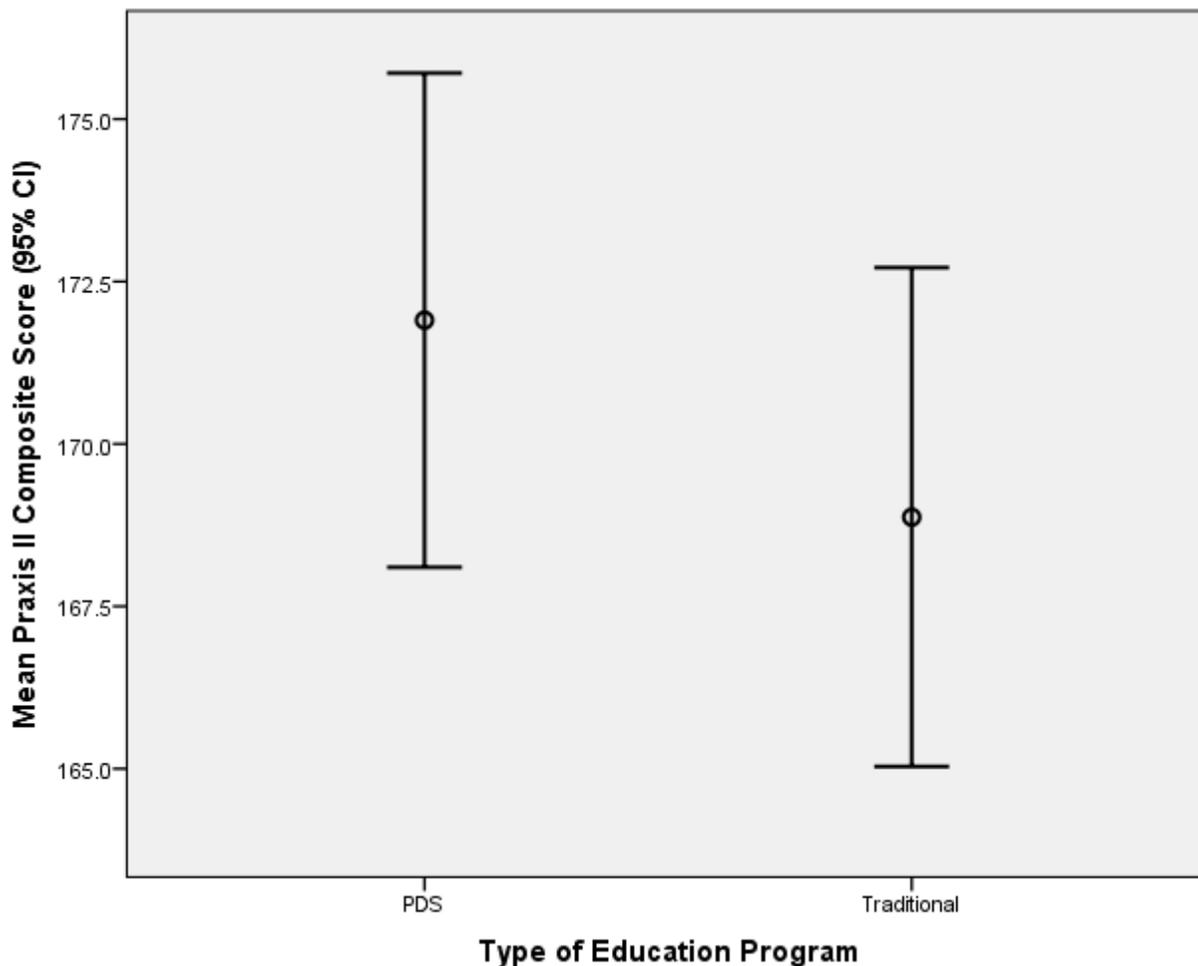


Figure 4. 2  
 Mean Praxis II Composite Scores for PDS and traditional samples, in nine school districts.  
 Error bars show the 95% confidence interval (CI) of the mean.

### All Graduates

The descriptive statistics for Praxis II composite scores in the sample of all graduates are shown in Table 4.5. For all graduates, the mean Praxis II Composite Score was 167.48 ( $SD = 16.09$ ), with a range of scores from 118 to 198. In the PDS sample the average score was 169.64 ( $SD = 14.73$ ) and in the traditional sample the average score was 166.55 ( $SD = 16.58$ ). There was not a statistically significant difference in the means of the two groups,  $t(268) = 1.450, p = .148$ .

The distribution histograms for PDS and traditional samples are shown in Figure 4.3. There was considerable overlap in the distributions. It was observed that the distribution in the

PDS reflected a more “normal” distribution, whereas the distribution in the traditional group had a more skewed distribution with a number of lower scoring individuals. The means plot with confidence intervals is shown in Figure 4.4. Overlap of approximately half of the confidence intervals was observed.

*Table 4. 5*  
*Comparison of Praxis II Composite Scores in PDS and traditional samples for all graduates*

		Total ( <i>N</i> = 270)	PDS ( <i>n</i> = 81)	Traditional ( <i>n</i> = 189)	Statistical Comparison
Praxis II	<i>M</i>	167.48	169.64	166.55	<i>t</i> (268) =
Composite	<i>SD</i>	16.09	14.73	16.58	1.450, <i>p</i> = .148
Score	Range	118 – 198	131 – 198	118 – 194	

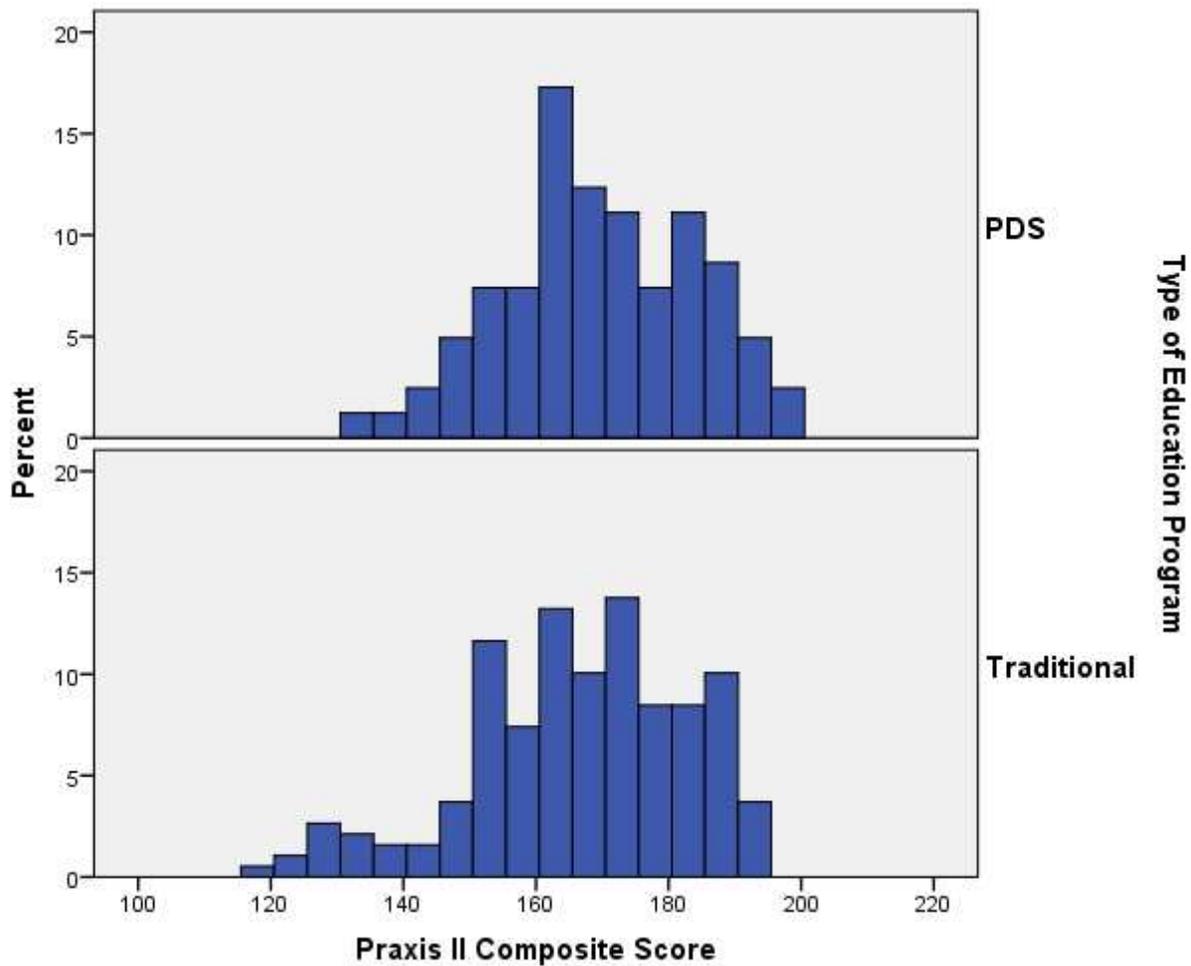
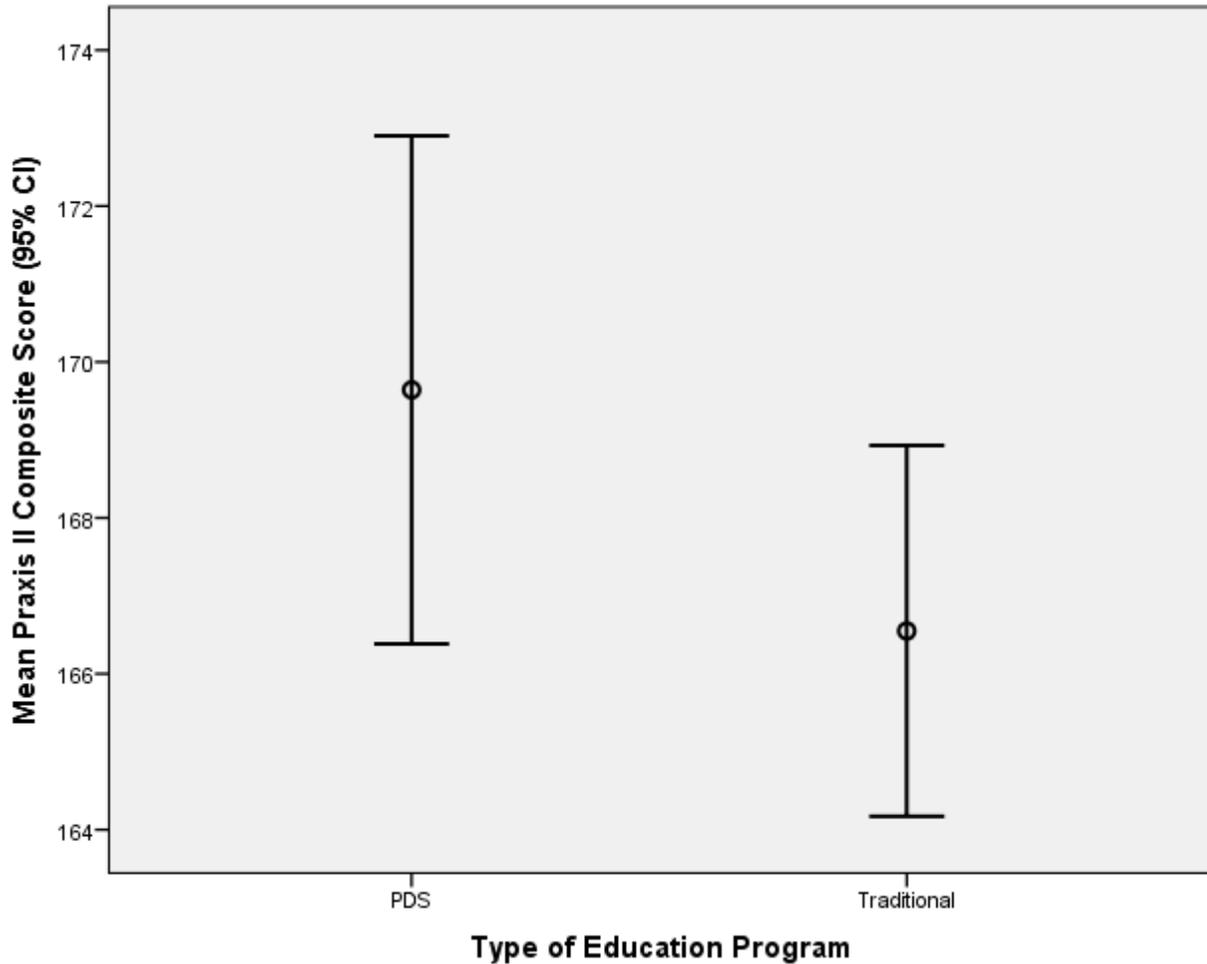


Figure 4. 3  
 Distribution histograms of Praxis II Composite Scores for PDS and traditional samples in all graduates.



*Figure 4. 4*  
*Mean Praxis II Composite Scores for PDS and traditional samples, in all graduates. Error bars show the 95% confidence interval (CI) of the mean.*

In summary, there was not enough evidence to reject the null hypothesis for RQ2. The pre-service teachers practicing within a PDS model and those practicing within a traditional model did not differ significantly in their average Praxis II Composite Scores. A similar result was obtained regardless of whether the subsample of nine school districts or the sample of all graduates was evaluated.

### **Research Question 3**

Research Question 3 (RQ3): Is there a difference between PDS and traditional pre-service teachers on the percentage of their students scoring non-proficient and proficient on the MAP test (“effectiveness”) in a) communication arts and b) mathematics, during their first year teaching?

Hypothesis for Research Question #3 ( $H_0^3$ ): There is no significant difference between the pre-service teachers practicing within the PDS model and the pre-service teachers practicing within a traditional model on the percentage of their students scoring non-proficient and proficient on the MAP test in a) communication arts and b) mathematics, during their first year teaching.

The participants for RQ3 were a subsample of 31 participants (14 PDS and 17 traditional) from the nine school districts that gave the MAP test during their first year of teaching. The percent of students scoring in various categorizations of proficiency were obtained for each pre-service teacher. The levels included below basic, basic, proficient, and advanced. Two composite categories were created from these values. The percent of students in the “non-proficient” category were created by summing the values in the below basic and basic categories. “Proficient” students were categorized as those scoring proficient or advanced. As the categorizations are finite and the percentages add up to 100, the proficient and non-proficient categorizations provided the same information (i.e.,  $100 - \text{“non-proficient”} = \text{“proficient”}$ ).

The outcome measures for this research question were the percent of students scoring non-proficient and proficient in the MAP communication arts and mathematics tests. These data are expressed in the form of *proportions* or *probabilities*; that is the percentage passing is dependent on the number of students passing the test, and the total number of students in the class. This is an example of data that follow the binomial probability distribution, which is used

to describe the probability of  $x$  successes (e.g., number of students passing the test) out of  $n$  trials (e.g., number of total students) (de Smith, 2011). Binary data pose a problem for linear modeling for a number of reasons. For one, the distributions are Bernoulli and not normal (although they may approximate the normal distribution when sample sizes are large and the probability is close to 0.5; de Smith, 2011). Binomial proportions have a finite range  $[0,1]$ ; in other words, a percentage score cannot be less than 0% or greater than 100%. A non-linear association among the probability values and the independent variable may be expected in some cases, which violates the assumptions of the linear model. For example, a change in  $x$  may be anticipated to have a smaller effect when the probability is close to 0 or 1 than when it is in the middle of the range (i.e., an S-curve shape rather than a linear line). In addition, the variance of a binomial proportion is defined as  $np(1-p)$ , where  $n$  is the sample size and  $p$  is the probability of “success” (de Smith, 2011). Thus, for any given sample size the variance changes with the value of  $p$  – small or large values have low variance, and the variance is at its maximum when probability levels are near 0.5 (de Smith, 2011). This is a violation of the homogeneity of variance assumption of the general linear model. Due to these issues, modeling the data in this study using the binomial distribution, rather than the normal distribution, would provide the most correct method of data analysis. However, since the class sizes for which each percentage was calculated on was not available, analyses using the binomial distribution were not possible. This should be considered a limitation of the study.

As an alternative, the Mann-Whitney U test of independent means was used to compare the distribution of percent of proficient students in the PDS and traditional groups. This was used rather than the independent samples  $t$ -test due to the issues with the underlying data distribution described above, combined with the small sample sizes. Since the percent of non-proficient and

proficient students provided the same information, analyses were only conducted on the percent of proficient students. The Mann-Whitney U Test is the non-parametric analogue to the Student's *t*-test. The procedure involves converting data to ranks, and then calculating the sum or mean rank for each group (McDonald, 2009). The resulting statistic is approximately chi-square distributed. Furthermore, exact significance values can be obtained; proving useful when the assumptions of the asymptotic method are not met (IBM Corp., 2011).

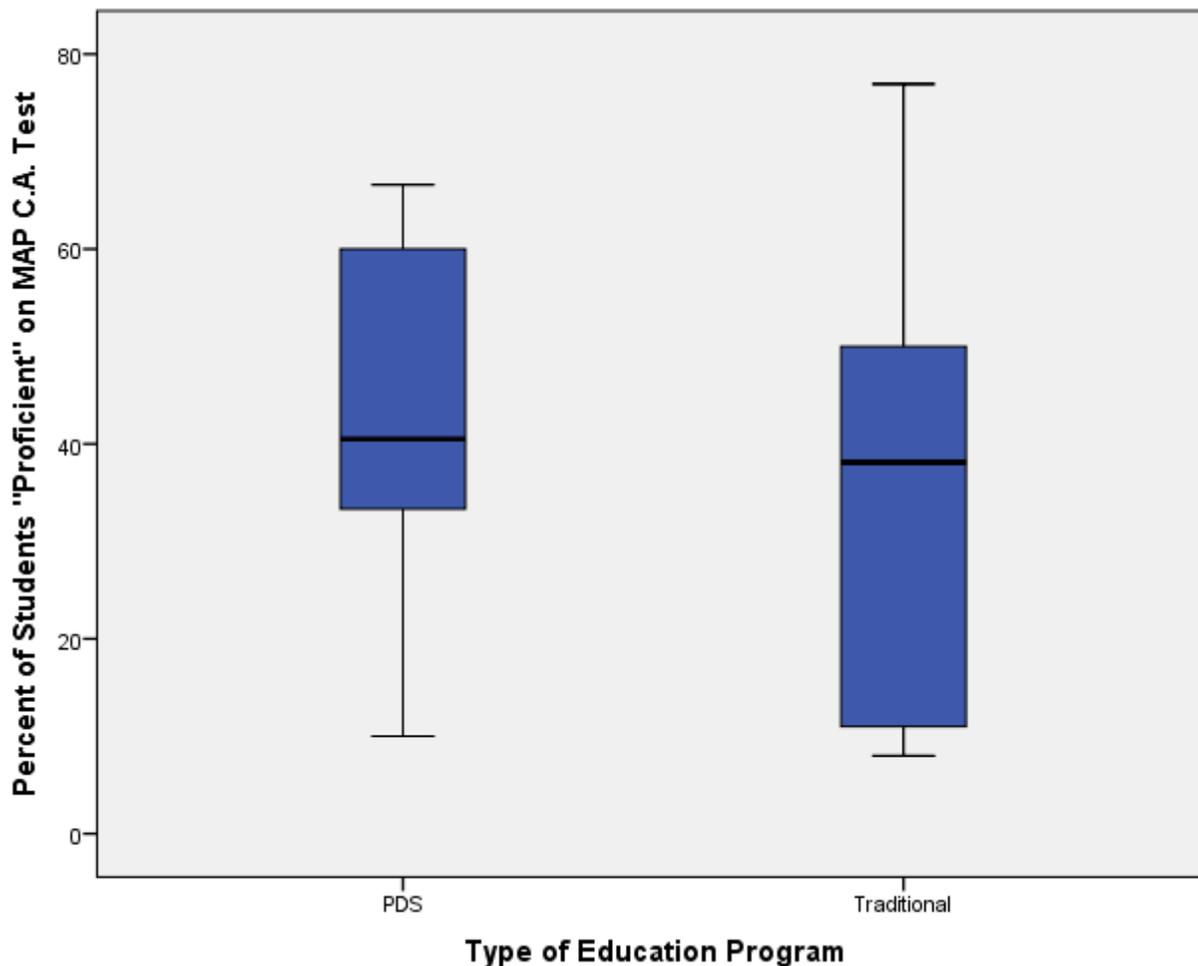
In order to compute descriptive statistics, the percent of students within each category of proficiency were treated as typical continuous variables. Descriptive statistics including the mean, standard deviation, minimum and maximum scores, and medians were computed for the total sample and the PDS and traditional groups. Boxplots were used to visualize the distribution of scores within each group.

### **Communication Arts**

The descriptive statistics for each categorization of proficiency in the total sample, PDS group and traditional group are shown in Table 4.6. It can be observed that there was considerable variability within each level of proficiency in the sample. For example, the average percentage of students scoring proficient (proficient + advanced) in the total sample was 39.38. However, there was a large standard deviation (20.85), and the scores ranged from 8 to 76.93 percent of proficient students for the teachers in this sample. In the PDS group, the average percent of proficient students in communication arts was 44.30 ( $SD = 17.10$ ) and in the traditional group the average percentage was 35.33 ( $SD = 23.21$ ). However, the medians were closer to one another, with the median in the PDS group being 40.5 and the median in the traditional group being 38.1. The boxplot depicting the medians and score distributions for the PDS and traditional groups are shown in Figure 4.5.

*Table 4. 6*  
*Percent of students scoring in each proficiency category on the MAP Communication Arts test, according to teacher's type of education program*

Communication Arts		Total ( <i>N</i> = 31)	PDS ( <i>n</i> = 14)	Traditional ( <i>n</i> = 17)
Below Basic (%)	Mean	13.78	12.00	15.25
	<i>SD</i>	15.55	17.19	14.44
	Range	0 – 70	1.7 – 70	0 – 50
	Median	7.69	7.15	7.8
Basic (%)	Mean	46.83	43.70	49.42
	<i>SD</i>	15.42	12.97	17.13
	Range	15.38 – 75	20 – 63	15.38 – 75
	Median	50.0	46.7	50.0
“Non-Proficient” (Below Basic + Basic %)	Mean	60.62	55.70	64.67
	<i>SD</i>	20.85	17.10	23.21
	Range	23.07 – 92	33.4 – 90	23.07 – 92
	Median	61.0	59.5	61.9
Proficient (%)	Mean	26.05	27.51	24.85
	<i>SD</i>	13.49	10.42	15.8
	Range	8 – 61.55	9 – 40.5	8 – 61.55
	Median	26.1	29.5	24.13
Advanced (%)	Mean	13.33	16.79	10.48
	<i>SD</i>	10.64	10.98	9.77
	Range	0 – 33	0 – 33	0 – 30.4
	Median	13.0	15.3	9.09
“Proficient” (Proficient + Advanced %)	Mean	39.38	44.30	35.33
	<i>SD</i>	20.85	17.10	23.21
	Range	8 – 76.93	10 – 66.6	8 – 76.93
	Median	39.0	40.5	38.1



*Figure 4. 5*  
*Boxplots of percent of students scoring "Proficient" (Proficient + Advanced) on the MAP Communication Arts (C.A.) test, for PDS and traditional pre-service teachers*

An independent-samples Mann-Whitney U test was used to compare the distributions of scores between the PDS and the traditional pre-service teachers. The dependent variable was the percent of students scoring "proficient" (proficient + advanced) on the MAP communication arts test. The distribution histograms used as the basis for these calculations, and the results of the statistical test are shown in Figure 4.6. The mean rank in the PDS group was 18.11 and the mean rank in the traditional group was 14.26. This difference was not statistically significant, Mann-Whitney U = 89.50, Exact Sig. = .246 (2-tailed).

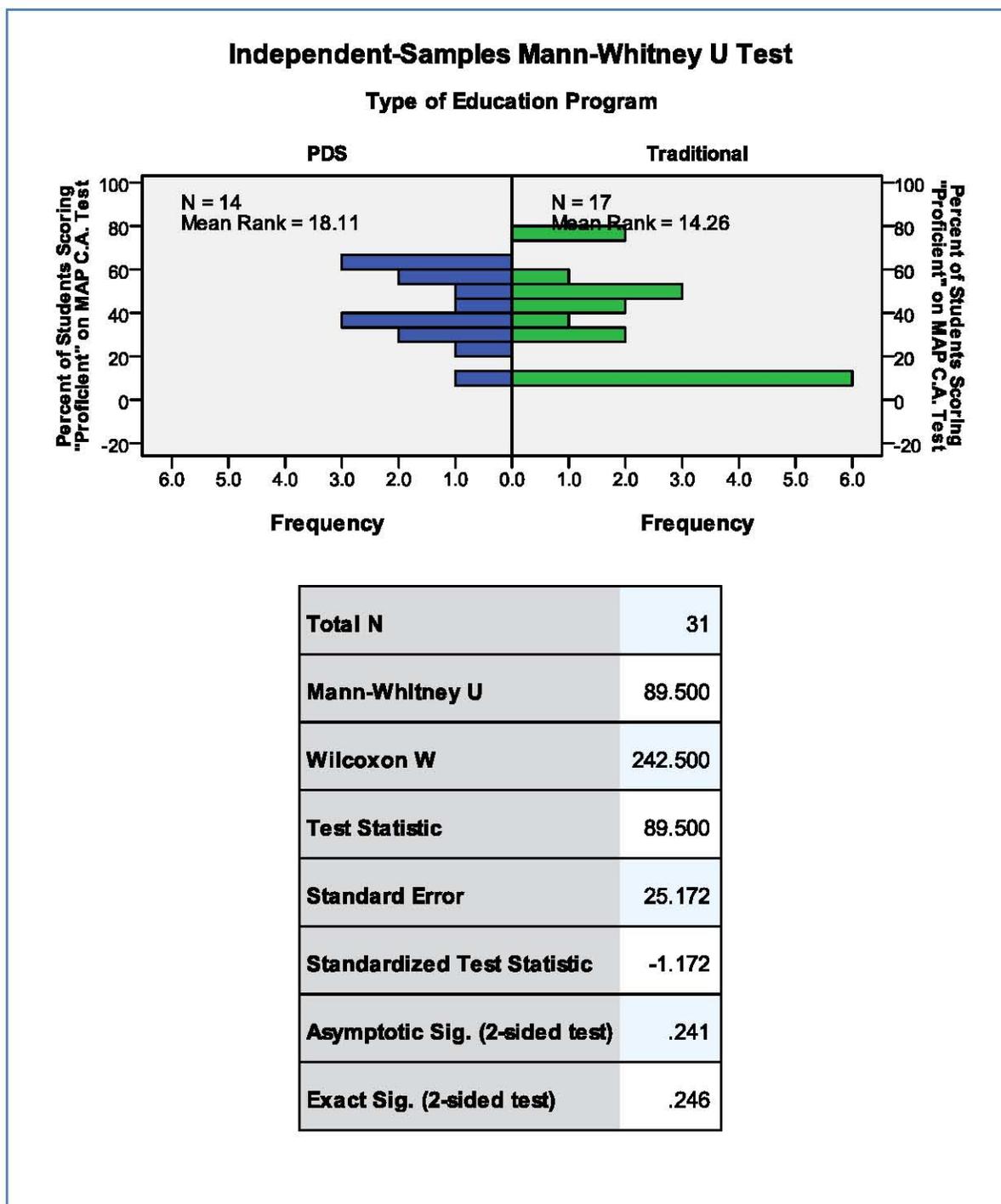


Figure 4. 6  
Independent Samples Mann-Whitney U Test of percent of students scoring “Proficient” on the MAP Communication Arts (C.A.) test, according to teacher’s type of education program

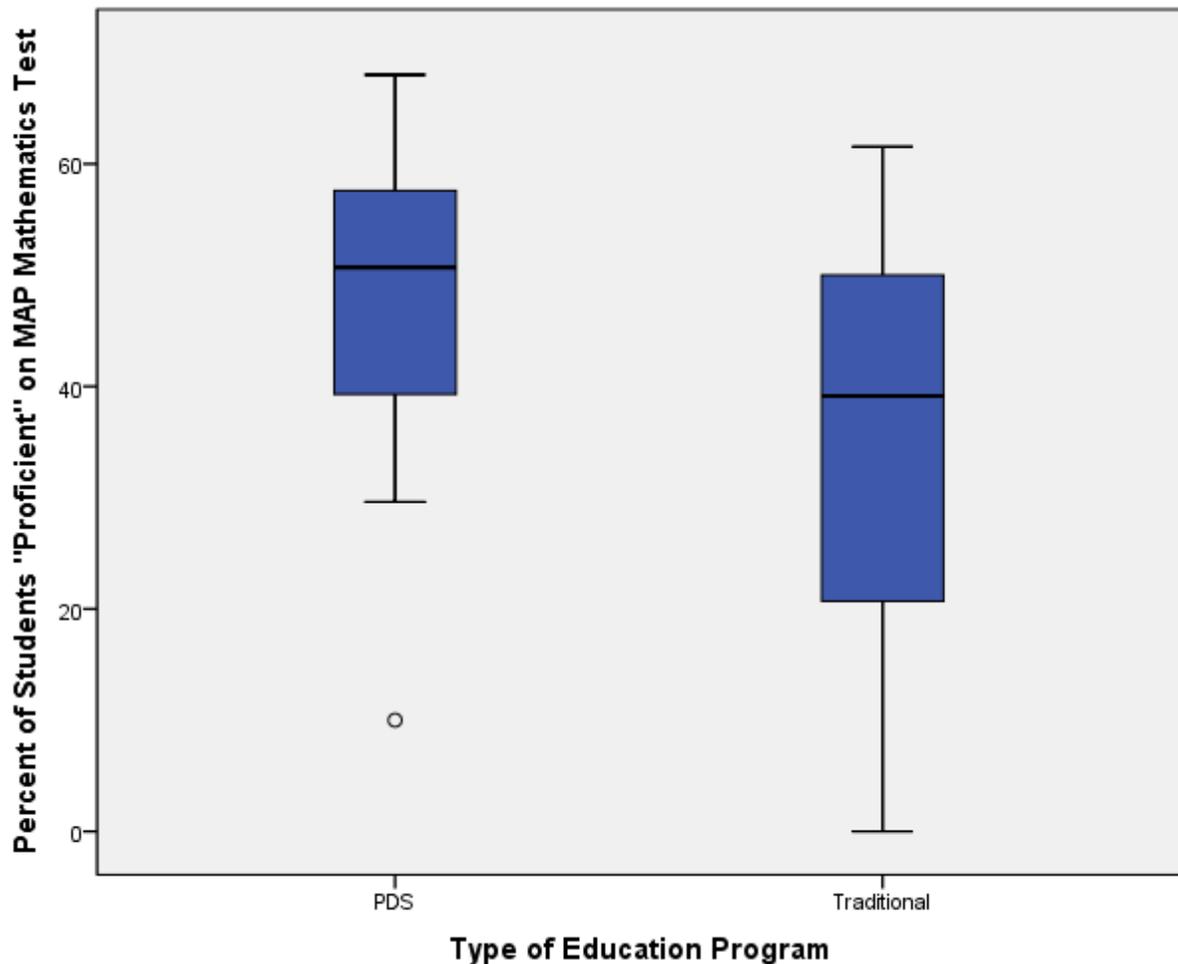
**Mathematics**

The descriptive statistics for each categorization of proficiency in the total sample, PDS group and traditional group are shown in Table 4.7. The average percentage of students scoring proficient in mathematics overall was 41.83 ( $SD = 17.22$ ), with a range of 0 to 68 percent of students and a median of 45.0. In the PDS sample, the average percent of students showing proficiency in mathematics was 47.48 ( $SD = 15.66$ ) and in the traditional sample, the average was 37.19 ( $SD = 17.49$ ). The boxplots showing the medians and score distributions are shown in Figure 4.7. Both distributions appeared relatively symmetric, although the spread of scores in the PDS group, as shown by the combined length of the bars and “whiskers”, appeared smaller than in the traditional group.

*Table 4. 7*  
*Percent of students scoring in each proficiency category on the MAP Mathematics test, according to teacher’s type of education program*

Mathematics		Total ( $N = 31$ )	PDS ( $n = 14$ )	Traditional ( $n = 17$ )
Below Basic (%)	Mean	9.91	8.58	11.00
	<i>SD</i>	12.63	15.27	10.34
	Range	0 – 60	0 – 60	0 – 40
	Median	6.9	4.45	8.0
Basic (%)	Mean	48.26	43.95	51.82
	<i>SD</i>	13.10	9.33	14.88
	Range	30 – 94	30 – 59.26	34.8 – 94
	Median	45.0	43.4	50.0
“Non-Proficient” (Below Basic + Basic %)	Mean	58.17	52.52	62.81
	<i>SD</i>	17.22	15.66	17.49
	Range	32 – 100	32 – 90	38.46 – 100
	Median	55.0	49.3	60.87
Proficient (%)	Mean	34.62	38.04	31.80
	<i>SD</i>	14.38	12.84	15.33
	Range	0 – 61.54	10 – 59	0 – 61.54
	Median	35.0	39.75	31.8

Mathematics		Total ( $N = 31$ )	PDS ( $n = 14$ )	Traditional ( $n = 17$ )
Advanced (%)	Mean	7.21	9.43	5.38
	<i>SD</i>	5.27	4.85	5.00
	Range	0 – 15.5	0 – 15.5	0 – 15.3
	Median	8.3	10.15	4.3
“Proficient” (Proficient + Advanced %)	Mean	41.83	47.48	37.19
	<i>SD</i>	17.22	15.66	17.49
	Range	0 – 68	10 – 68	0 – 61.54
	Median	45.0	50.7	39.13



*Figure 4. 7*  
*Boxplots of percent of students scoring "Proficient" (Proficient + Advanced) on the MAP Mathematics test, for PDS and traditional pre-service teachers*

The results of the independent samples Mann-Whitney test with accompanying distribution histogram are shown in Figure 4.8. The mean rank for the percent of students scoring proficient on the mathematics test was 18.96 in the PDS group and 13.56 in the traditional group. This difference was not statistically significant, Mann-Whitney  $U = 77.50$ , Exact Sig. = .100 (2-tailed).

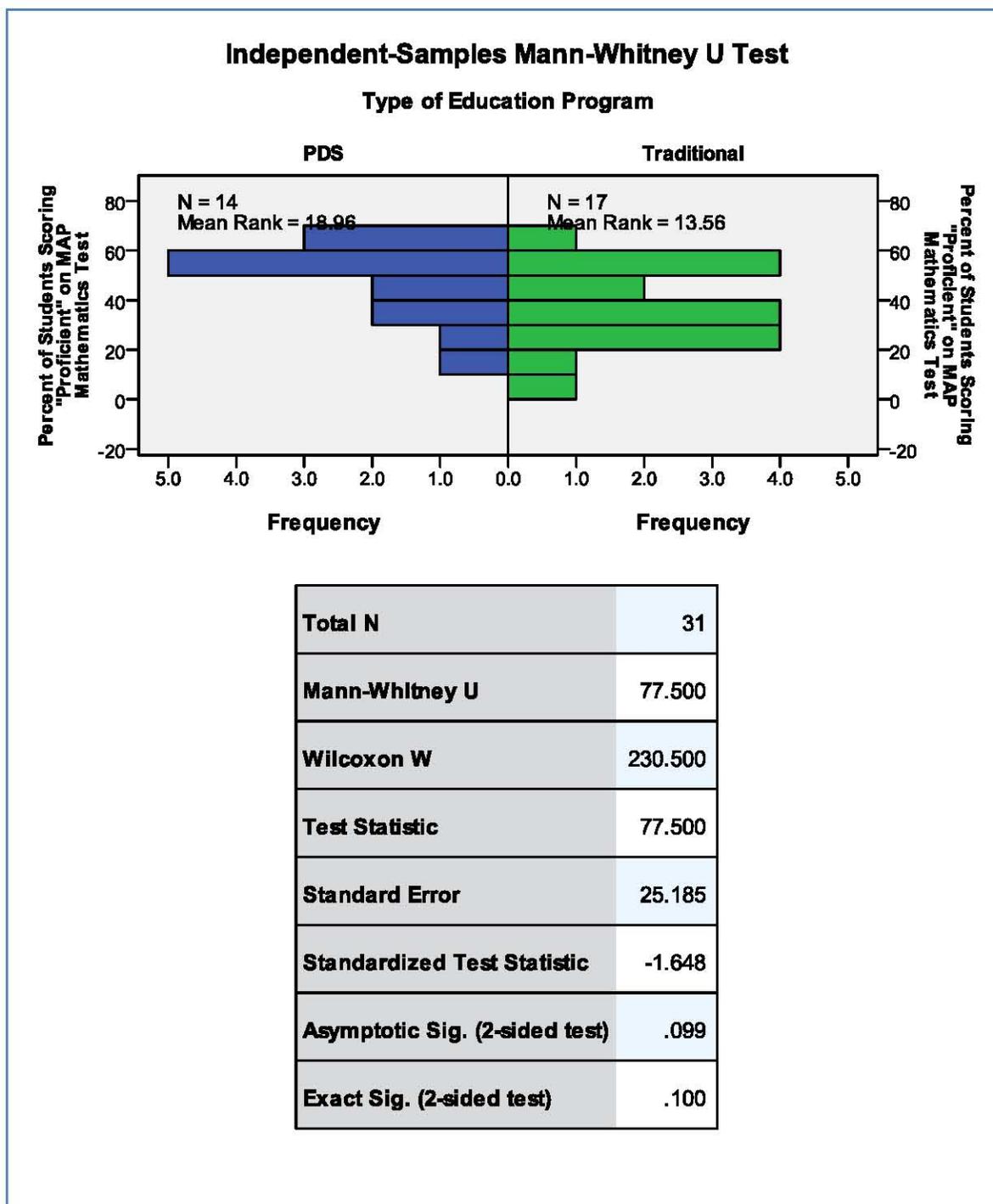


Figure 4. 8  
Independent Samples Mann-Whitney U Test of percent of students scoring “Proficient” on the MAP Mathematics test, according to teacher’s type of education program

In summary, there was insufficient evidence to reject the null hypothesis for RQ3. Based on the sample and methodology used in this study, there was no significant difference between

the pre-service teachers practicing within the PDS model and the pre-service teachers practicing within a traditional model on the percentage of their students scoring non-proficient and proficient on the MAP test in a) communication arts and b) mathematics, during their first year teaching.

### **Effect Size and Power**

Effect size estimates were calculated for the analyses in research questions 2 and 3, based on the observed means and standard deviations. Effect sizes provide information on the strength of the relationship between the variables being studied, independent of the sample size (Shaughnessy, Zechmeister, & Zechmeister, 2012). When comparisons are being made between two means, Cohen's  $d$  is the commonly used measure of effect size. It is a ratio of the difference between means divided by the pooled standard deviation (Shaughnessy et al., 2012), and is thus a measure of effect size in standard deviation units. Thus, a  $d$  of 1.0 indicates that the means are one standard deviation apart, and a  $d$  of 0.5 indicates that the means are half a standard deviation apart. Cohen's guidelines for interpreting effect sizes are  $d$ s of .20, .50, and .80 for small, medium, and large effect sizes, respectively (Shaughnessy et al., 2012). The calculated effect sizes are reported in Table 4.8.

For the differences in mean Praxis II Composite scores in PDS and traditional pre-service teachers, the effect size was .209 in the sample of nine school districts and .197 in the sample of all graduates. These obtained effect sizes are very similar in both samples and indicate a "small" difference between the two group means.

The results for the percent of students scoring proficient on the MAP communication arts test by teacher's type of education program yielded a small to medium effect size of  $d = .440$ . For the MAP mathematics test, the difference between the means of PDS and traditional teachers

resulted in a medium-to-large effect size of  $d = .620$ . Although, it should be kept in mind that the means and standard deviations are not the most ideal parameters to summarize percentage data. Despite this, the results indicate relatively substantial differences for RQ3, despite the non significant findings. There were only 31 participants in the sample for RQ3.

*Table 4. 8*  
*Effect sizes, achieved power, and required sample size for differences based on the obtained results*

Comparison between PDS and traditional groups	Type of Test	Effect Size $d$	Achieved Power	Required Total Sample Size <sup>a</sup>
Praxis II Composite Score – <u>nine districts</u>	Independent Samples $t$ -test	0.209	0.198	720
Praxis II Composite Score – <u>all graduates</u>	Independent Samples $t$ -test	0.197	0.315	812
Percent of Students Scoring Proficient on Communication Arts Test	Independent Samples Mann-Whitney Test	0.440	0.210	172
Percent of Students Scoring Proficient on Mathematics Test	Independent-Samples Mann-Whitney Test	0.620	0.367	88

Note. <sup>a</sup>For a two-tailed test, based on calculated effect size,  $\alpha = .05$ , Power  $(1-\beta) = .80$ , and equal sample sizes in each group.

Post-hoc analyses of power were also conducted for the results in research questions 2 and 3, to determine the power these analyses had to detect differences based on the obtained effect sizes. Power refers to the likelihood that a statistical test will lead to correct rejection of the null hypothesis (Shaughnessy et al., 2012). Power is influenced by the interplay between the level of statistical significance (alpha level), the effect size, and the sample size. Post-hoc power analyses can be used to show the likelihood of detecting an effect. As seen in the table, the power achieved by each analysis was low (0.198 to 0.367). Thus, the likelihood of finding differences of the observed magnitudes with the sample sizes that were obtained was improbable.

Finally, the estimates of effect size were used to estimate the total sample sizes that would be required to find support of the alternative hypotheses in each case (i.e., differences between PDS and traditional groups), if one assumed a future study. As evidenced in the table, the larger the effect, the smaller the sample size that would be required to detect a difference. For the analyses involving differences in Praxis II scores, very large samples (~700-800) would be required to “show” a statistically significant difference between PDS and traditional samples, assuming the *size* of the effect remained constant. This is due to the small standardized difference (effect size) observed in these analyses.

However, for the larger effects observed in the analysis of the MAP proficiency of students, smaller samples of ~100-200 teachers would be required to detect differences between the proficiency of students in classrooms of PDS and traditional pre-service teachers.

### **Summary**

In summary, the goal of this study was to investigate the differences between pre-service teachers in a PDS model and those in a traditional model in terms of their “promise”, as measured by Praxis II scores, and “effectiveness”, as measured by the percentage of their students showing proficiency on MAP communication arts and mathematics tests.

Investigation of demographic and background differences between PDS and traditional groups yielded very few differences between groups (RQ1). In the subsample of pre-service teachers from the nine school districts, there were no differences between groups on the characteristics of gender, age, GPA, or CBASE English composite score. In the sample of all graduates, there were proportionately more males in the traditional program than the PDS program. Age, GPA and CBASE English composite did not differ between PDS and traditional groups in the sample of all graduates.

There were no differences between PDS and traditional groups on the Praxis II composite score, in either the nine school district sample or the sample of all graduates (RQ2). The effect sizes were small in these analyses.

Analysis of the percent of students scoring proficient in communication arts or mathematics according to the teacher's type of educational program also did not yield statistically significant differences (RQ3). However, the effect sizes were moderate to large in these analyses, with the mean percent of proficient students in the PDS group being larger than the mean percent of proficient students in the traditional group. Limitations of this analysis included the small sample size and the less than ideal methodology used to analyze the percentage data.

## Chapter 5

### SUMMARY, DISCUSSION, AND RECOMMENDATIONS

Recent reform initiatives have required statewide definitions of effective and highly effective teachers. Legislation has been developed and passed to improve, advance, and evaluate the effectiveness of both teachers and teacher preparation programs across the nation. A Blueprint for Reform, The Reauthorization of the Elementary and Secondary Education Act, insists teacher preparation programs ensure their candidates will be effective new teachers (United States Department of Education, March 2010). Thus, teacher preparation programs need to be accountable for their candidates' content knowledge, performance, and dispositions, as these qualities may impact student achievement throughout the entire P – 12 continuum.

Pre-service teachers are held accountable through coursework required of their general education program and the prerequisite to pass a proficiency exam of content knowledge prior to admittance into an undergraduate teacher education program (H.R. 747, 1985). In addition, some form of testing is required in a majority of the United States as a part of the teacher certification process.

The Blueprint for Reform calls for P – 12 schools and teacher preparation programs to implement collaborative efforts to ensure novice and practicing teachers improve their skills and provide for their professional growth in the ability to deliver instruction. NCATE (2010) recognized ten essential design principles for clinically-based teacher preparation programs which “fully integrates content, pedagogy, and professional coursework around a core of clinical experiences” (p. 8). These principles focused on student learning, data-driven decisions, embedded clinical preparation, and strategic partnerships. These strategic partnerships follow the characteristics of the professional development school, a collaboration between P – 12

schools and teacher preparation programs to enhance pre-service teachers content knowledge, skills, and disposition in order to become highly effective teachers.

This study examined the clinical field experience in a teacher preparation program to determine if the PDS model produced more promising pre-service teachers and more effective new teachers than the traditional model. Chapter five will provide a summary of the research study and will be organized into the following sections: summary of the study, findings, conclusions, limitations, and recommendations.

### **Summary of the Study**

#### **Literature Review**

Two types of teacher education programs were utilized for this study, the professional development school model and the traditional education model. An historical overview of the professional development school was explored, connecting the collaborative relationship of PDS with the research of situated learning and the model of community practice. As described by Darling-Hammond (1994), a PDS provides a clinical experience for pre-service teachers, while guiding and developing the knowledge and understanding of the novice, teacher educator, and experienced teacher. Whether recognized as professional development schools (Holmes Group, 1986), clinical schools (Carnegie Forum on Education and the Economy, 1986) or professional practice schools (Levine, 1992), the aim of this collaborative effort is to prepare pre-service teachers, advance experienced teachers, and promote student learning. The professional development school, as influenced by the medical profession's teaching hospital model, provides continuing research, growth, and development opportunities for the pre-service teacher and the practicing educator (Holmes Group, 1990).

Lave and Wenger (1991) and Wenger's (1998) theory of situated learning and the model of community practice provide the theoretical framework of this study. Within a professional development school program, pre-service teachers integrate into a community of practice to learn beside experienced teachers, engage in communication with school stakeholders, and accumulate on-going experiences with students in the P – 12 classrooms. The Holmes Group (1986) promoted a community of practice and research within schools. Their vision for reforming teacher education and the teaching profession included developing higher standards for the academic foundation of teacher candidates, increased standards for certification of teachers, and the distinction between novice, competent, and professional teachers. Similar to the progression a learner makes from Lave and Wenger's (1991) legitimate peripheral participation to full participation within a community, the Holmes Group provides a framework of the novice instructor, professional teacher, and career professionals to work together to improve the quality of instruction and promote student achievement. Linking to the steps of teacher certification, the Holmes Group (1990) stressed the importance of collaboration between teacher preparation programs and P – 12 schools.

Most of the current research comparing PDS and traditional programs has been qualitative in nature and focused on teacher retention, team teaching efforts, extended professional development opportunities, and the rewards and benefits of the PDS model (Castle et al., 2006; Latham & Vogt, 2007; Riley et al., 2005; Vontz et al., 2007). Several studies found PDS pre-service teachers more confident and prepared to begin their first year teaching (Book, 1996; Darling-Hammond et al., 2002; Sandholtz & Wasserman, 2001; Scharmann, 2007). Castle et al. (2007) found PDS candidates utilized more integrated thinking, assessment-driven instruction, and theory-connected practice.

As a requisite of teacher preparation programs, The United States Department of Education (2004) requires pre-service teachers to demonstrate competency in the areas of subject knowledge and pedagogy in order to gain elementary education certification. The Praxis II (Subject Assessments) is offered to teacher candidates seeking initial teaching licensure. A variety of studies determined potential predictors of Praxis II scores; these predictors include SAT scores and preparedness through a teacher-education program (Brown et al., 2008; Angrist & Guryan, 2004). Angrist and Guryan (2004) found that grades are not highly correlated with Praxis II pass rates. Issues regarding the exclusive use of assessments like the Praxis II to identify effective teachers have been raised (Melnick & Pullin, 2002; Popham, 1999).

While PDS programs have been evaluated using a variety of methods, few quantitative studies utilized Praxis II and only a small number of studies attempted to link teacher licensure tests to student achievement. Wright (2009) conducted a quantitative study finding no significant relationship between student teachers' Praxis II test scores, student teacher evaluation scores, and senior exit interview scores for PDS participants, noting that the value of PDS may not be aligned if standardized assessments such as the Praxis II. The Teacher Performance Assessment Consortium (TPAC) has developed edTPA, a performance-based common initial licensing assessment, which may provide a more clear indication of increased teacher quality or student achievement when implemented (Darling-Hammond, 2010). Kennedy (1999) and Kennedy and Shiel (2010) describe the difficulty with linking student achievement to teacher quality, due to the inability to connect standardized achievement tests to the complexity of student learning and the many outside factors that can influence student learning.

While outside influences impact student learning, Wong and Glass (2005) affirmed that PDS partnerships provide benefits for low-achieving students. In their study, PDS candidates

provided one-on-one tutoring to third and fourth grade students, resulting in gains in reading and writing, based on a pre/post diagnostic grade level tests and teachers' written evaluations. Similar results were found by Castle et al. (2008) and Shroyer et al. (2007) whose studies evaluated the collaborative process, the change of teacher practices, and the impact of P – 12 student achievement. With increasing accountability and higher standards for P – 12 institutions, collaboration of practicing teachers, pre-service teachers and faculty members provides an avenue to positively impacting student achievement.

Despite this increase in accountability and focus on effective clinical experiences in teacher preparation programs, quantitative research on the impact PDS programs have on P – 12 student achievement has not been extensive. Thus, the purpose of this research study was to determine if there is a difference between the promise and effectiveness of pre-service teachers in the professional development school versus a traditional school model within Macon University. As previously mentioned, Lave and Wenger (1991) and Wenger's (1998) theory of situated learning and the model of community practice provided the theoretical framework of this study.

### **Design and Methods**

This study relied on the quantitative research approach to examine two types of pre-service teacher education models, PDS and traditional, in an attempt to determine causation of promise and effectiveness in pre-service teachers and their students' achievement as measured by the Praxis II certification tests and the Missouri Assessment Program (MAP) state assessment scores.

Based on the purpose of this study, the following research questions were addressed:

4. Is there a difference between PDS and traditional pre-service teachers on the demographic characteristics of age, gender, undergraduate grade point average (GPA), and CBASE English composite score?
5. Is there a difference between PDS and traditional pre-service teachers on their overall Praxis II Test score (“promise”)?
6. Is there a difference between PDS and traditional pre-service teachers on the percentage of their students scoring proficient and non-proficient on the MAP test (“effectiveness”) in a) communication arts and b) mathematics during their first year teaching?

This study utilized existing data of alumni from Macon University’s data collection system within the School of Education beginning 2006-2007 and ending 2010-2011 academic years. Data included only those alumni who took the Praxis II: Elementary Education: Curriculum, Instruction, and Assessment, Test Code 10011, certification examination.

A subsample of nine school districts participated of the study in order to provide a comparative sample and obtain MAP test data. Participating school districts only provided MAP test data for teachers that were alumni of Macon University. District MAP test data were limited to teachers in grades third through eighth during their first year of teaching.

Variables included within the study were type of pre-service teacher education program (PDS or traditional), Praxis II: Elementary Education: Curriculum, Instruction, and Assessment, Test Code 10011, overall score and the percentage of students proficient and non-proficient by class on the MAP (communication arts and mathematics). Student MAP test scores were reported as a percentage of students scoring at each proficiency level by class, with no teacher names or student names attached.

## **Findings**

### **Background Characteristics of PDS and Traditional Pre-Service Teachers**

The first research question establishes a demographic profile of the pre-service teachers within the study, during the academic years of 2006-2007 through 2010-2011. The analysis was conducted to determine whether there was a difference between PDS and traditional pre-service teachers based on age, gender, undergraduate grade point average (GPA), and College Basic Academic Subjects Examination (CBASE) English composite scores. This research question was addressed using descriptive statistics, independent-samples *t*-tests and a Fisher's exact test and was repeated twice. The first results were compiled from a subsample of nine school districts consisting of 115 pre-service teachers (52 pre-service teachers practicing within a PDS model and 63 pre-service teachers practicing within a traditional model). The second analysis was based on the data from all 270 pre-service teachers (81 from the PDS model and 189 from the traditional model) that graduated from Macon University during the years of the study. The findings for the background characteristics are described by category.

#### **Gender**

Due to the small number of males in the sample, the Fisher's exact test was utilized for gender. The findings indicate that there was a significant difference in the gender distribution of the PDS and traditional pre-service teacher groups when all graduates were analyzed; the traditional group had proportionately more males than the PDS group. Within the subsample of nine districts, 94.8% in the total subsample were female, 98.1% of the PDS group was female, and 92.1% of the traditional group was female. Based upon the data from all graduates of Macon University, 90.4% were females and 9.6% were males, 98.8% of the PDS group was female with only 1.2% male, and 86.8% of the traditional group was female with 13.2% male.

## **Age**

There was no statistically significant difference in the mean ages of PDS and traditional pre-service teacher groups. The average age within the subsample of nine districts was 30.61 years (32.26 years for all graduates). Average age of the subsample PDS group was 30.35 years (31.40 years for all graduates) and traditional group was 30.83 years (32.63 years for all graduates). Students ranged in age between 21 – 52 years, with the subsample of nine districts (21 – 63 years for all graduates). This range of students is consistent with the completion program model provided by Macon University.

## **Undergraduate Grade Point Average (GPA)**

The mean GPA between the PDS group and the traditional group was not statistically significant  $t(268) = 1.879, p = .061$ . The mean GPA with the subsample of nine districts was 3.44 (3.41 for all graduates). The mean GPA of the subsample PDS groups was 3.48 (3.46 for all graduates) and traditional group was 3.40 (3.38 for all graduates). The data did show, however, a non-significant difference with a trend towards higher GPA in the PDS group than the traditional group within the average GPA for all graduates being 3.46 and 3.38, respectively.

## **CBASE English Composite Score**

Evaluation of CBASE English composite scores indicated that there was no significant difference between the PDS and traditional pre-service teacher groups when both the subsample and all graduates were analyzed. Within the subsample of nine districts, the average CBASE English composite score was 287.07, 286.29 for the PDS group, and 287.71 for the traditional group. Based upon the data from all graduates of Macon University, the average CBASE English composite score was 285.09, 288.38 for the PDS group, and 283.67 for the traditional group. The set standard for admittance into the Teacher Education program at Macon University

is 235 for the CBASE English composite score. Likewise, the Missouri State Board of Education established cutoff score is set at 235 for the CBASE English composite score (College BASE, 2012).

Overall, the demographic and background evaluation yielded only one statistically significant difference between PDS and traditional pre-service teacher groups. For the analysis of age, GPA, and CBASE English composite scores, there were no differences found between groups in both the subsample and all the graduates from Macon University. For the analysis of gender, there were proportionately more males in the traditional than the PDS program when reviewed for all graduates.

### **Promise of PDS and Traditional Pre-Service Teachers**

The second research question addressed the “promise” of the pre-service teacher as measured by their overall Praxis II Test score. The analysis was conducted to determine if there was a difference between PDS and traditional pre-service teachers on their overall Praxis II composite test scores during the academic years of 2006-2007 through 2010-2011. This research question was addressed using descriptive statistics and independent-samples *t*-tests. In addition, this analysis was repeated twice. As in the first research question, the first results were compiled from a subsample of nine school districts consisting of 115 pre-service teachers (52 pre-service teachers practicing within a PDS model and 63 pre-service teachers practicing within a traditional model). The second analysis was based on the data from all 270 pre-service teachers (81 from the PDS model and 189 from the traditional model) who graduated from Macon University during the years of the study.

The findings indicated no statistically significant difference between the PDS and traditional groups for the Praxis II composite test scores. The *p*-value was .269 for the

subsample of nine school districts and .148 for all graduates of Macon University. The average Praxis II composite score within the subsample of nine districts was 170.24 (167.48 for all graduates). Average Praxis II composite score of the subsample PDS group was 171.90 (169.64 for all graduates) and traditional group was 168.87 (166.55 for all graduates). It was observed that the PDS group reflected a more “normal” distribution, whereas the traditional group had a more skewed distribution with a number of lower scores being reported. Although not significantly different, within both analyses the average Praxis II composite score was higher in the PDS group than the traditional group. Removal of the few outliers within the subsample of nine school districts analysis resulted in the mean of the traditional group even closer toward the mean of the PDS group, thus reinforcing the indicated finding of no statistically significant difference.

Even though this study was not an intervention study, effect size estimates were calculated for this research question, based on the observed mean and standard deviation, in order to provide information additional information about the strength of the relationship between the variable studied independent of the sample size (Shaughnessy et al., 2012). For the difference in the mean Praxis II composite scores of PDS and traditional pre-service teachers, the effect size was .209 within the subsample of nine school districts and .197 within the sample of all graduates. These obtained effect sizes were similar in both samples and indicate a small difference between the two groups, as interpreted using Cohen’s *d* guidelines for measurement of effect size (Shaughnessy, et al., 2012). The post-hoc power analysis showed the likelihood of finding differences of the observed magnitudes improbable based on the sample sizes obtained. In consideration of a possible future study, an estimate of the total sample size required was found utilizing the estimates of effect size. For the estimates of effect size, analysis focused on

the differences in Praxis II scores, samples of ~700-800 would be necessary to demonstrate a statistically significant difference between PDS and traditional samples, assuming the size of the effect remained constant.

### **Effectiveness of PDS and Traditional Pre-Service Teachers**

The final research question addressed the “effectiveness” of the pre-service teacher as measured by the Missouri Assessment Program (MAP) state assessment scores. Specifically, the third research question sought to find a difference between PDS and traditional pre-service teachers on the percentage of their students scoring proficient and non-proficient on the MAP test in the areas of communication arts and mathematics during their first year teaching.

A subsample of nine school districts participated of the study in order to obtain MAP test data. Participating school districts only provided MAP test data for teachers who were alumni of Macon University, were employed in the district during their first year of teaching, and taught in grades third through eighth during their first year. The subsample consisted of 31 teachers with the PDS group of  $n = 14$  and the traditional group of  $n = 17$ . MAP test scores were reported as a percentage of students scoring at each proficiency level (below basic, basic, proficient, and advanced) by class in communication arts and mathematics with no teacher names or student names attached. The percent of students in the “non-proficient” category were created by summing the values in the below basic and basic categories. The “Proficient” category was formed by utilizing the values of proficient and advanced.

This research question was addressed using descriptive statistics and the Mann-Whitney U test of independent means, due to issues with underlying data distribution and a small sample size. The findings are described by category - communication arts and mathematics.

#### **Communication Arts**

The difference between the PDS and traditional teachers on the percentage of their students scoring proficient and non-proficient on the MAP test in the areas of communication arts was not statistically significant. Utilizing descriptive statistics, it was observed that there was considerable variability within each level of proficiency within the sample. The average percentage of students scoring proficiency in the total sample was 39.38, but with large standard deviation of 20.85. The ranges of scores from 8 to 76.93 percent of proficient students for the teachers within the sample. The PDS and traditional groups were consistent with these findings. The medians, however, were closer to one another. Students' median communication arts scores were closer to one another. The median percent of proficient students for the PDS sample was 40.5, with 38.1 for the traditional sample.

The Mann-Whitney U test of independent means was used to compare the distributions of scores between the PDS and traditional teachers. The dependent variable used was the percent of students scoring proficient on the MAP communication arts test. The findings did not indicate a statistically significant difference, as the mean rank of the PDS group was 18.11 and the mean rank of the traditional group was 14.26, Mann-Whitney U = 89.50, Exact Sig. = .246 (2-tailed).

### **Mathematics**

The findings in the area of mathematics indicated no statistically significant difference between the PDS and traditional teachers on the percentage of their students scoring proficient and non-proficient on the MAP test. Through the use of descriptive statistics, an average, range, and median percentage of students scoring proficient was obtained. The average percentage of students scoring proficient overall was 41.83, 47.48 for the PDS group, and 37.19 for the traditional group. The spread of scores in the PDS group ( $SD = 15.66$ , range 10-68) was slightly smaller than in the traditional group ( $SD = 17.49$ , range 0-61). The results of the Mann-Whitney

U test of independent means indicated the difference between the mean rank for the percent of students scoring proficient in the PDS group (18.96) and the traditional group (13.56) was not statistically significant, Mann-Whitney  $U = 77.50$ , Exact Sig. = 100 (2-tailed).

Again, due to the limited sample size within RQ3, effect size estimates were calculated for this research question, based on the observed mean and standard deviation in order to provide additional information about the strength of the relationship between the variables being studied. When looking at the results for the percent of students scoring proficient on the MAP communication arts test by PDS and traditional pre-service teachers, the effect size was  $d = .440$ , which is considered a small to medium effect size. The results effect size estimates for the MAP mathematics test between the means of PDS and traditional teachers was  $d = .620$ , which is considered a medium to large effect size (Shaughnessy, et al., 2012). With this in mind, despite the non-significant findings reported, there appears to be an indication of relatively substantial differences in the effectiveness of the PDS teachers compared to the traditional teachers, particularly in the area of their students' mathematics achievement scores.

Based on the small sample size obtained within RQ3, the post-hoc power analysis showed the likelihood of finding differences of the observed magnitudes improbable. In consideration of a possible future study, an estimate of the total sample size required was found utilizing the estimates of effect size. Due to the larger effect size observed, the estimates of effect size based on the differences in MAP proficiency of students in the areas of communication arts and mathematics, samples of ~100-200, would be necessary to demonstrate a statistically significant difference between PDS and traditional samples, assuming the size of the effect remained constant.

## **Discussion**

The findings in this study show no statistically significant difference between PDS and traditional pre-service teachers in their “promise”, as measured by the Praxis II composite test scores. Consideration of further research is recommended, as provided by the post-hoc power analysis, which showed the likelihood of finding differences of the observed magnitudes improbable based on the sample sizes obtained. In addition, the analysis to determine “effectiveness” of the pre-service teacher, as measured by the Missouri Assessment Program (MAP) state assessment scores, did not yield statistically significant differences. However, the effect sizes were moderate to large in these analyses, with the mean percent of proficient students in the PDS group being larger than the mean percent of proficient students in the traditional group in mathematics. Additional consideration of further research is recommended to determine if there is a difference between PDS and traditional pre-service teachers in their “effectiveness” in the classroom, as measured by a state assessment test.

This study does not confirm Lave and Wenger (1991) and Wenger’s (1998) theory of situated learning and the model of community practice, as it does not find statistically significant differences. While contemplation of this theory is still necessary, due to comparison of the mean percent of proficient students in the PDS group versus the mean percent of proficient students in the traditional group. Because of the small sample size, not enough information has been generated to discount the connection to the theoretical framework, but neither is it supported by the findings of this study. Attention to the progression a learner makes from Lave and Wenger’s (1991) legitimate peripheral participation to full participation within a community and the Holmes Group framework of the novice instructor, professional teacher, and career professionals, still provides a basis for teacher preparation programs to work together to improve the quality of instruction and promote student achievement. Through the relationship of teacher

preparation programs and teacher certification, Lave and Wenger (1991) and the Wenger's (1998) theory provide a framework for situated learning within a community of practice as reflected in the professional development school model.

Schools of Education that have invested time, money and energy into developing professional development school relationships may wonder whether these investments have been worth it. The findings of this study are inconclusive with regards to that issue. PDS models may yield many positive results not measured by this study, but according to the data analyzed in this study, Praxis II scores do not support it. State assessment scores of students the first year of teaching may support the investment of the PDS model, especially for graduates' students' math achievement scores. With that said, those results can only be considered tentative or preliminary, as they were found in the effect size analysis and no statistically significant difference was established between the effectiveness of teachers prepared in PDS programs versus traditional programs.

It is worth noting that the assumptions of this study are the promise and effectiveness of teachers as measured through standardized test results. This is a quantitative study, and it is appropriate that these assumptions remain in place in the context of this study. However, it is possible, likely even, that there are other, non-quantifiable characteristics of teachers that contribute to their promise and effectiveness. Wong and Glass (2005) found that concepts and skills being taught by PDS students through individualized attention and small group instruction benefitted students. Qualitatively, Wong and Glass (2005) and Castle et al. (2008) found positive relationships between the PDS model and student achievement. The concepts of promise and effectiveness remain important, but there could be other ways, more qualitative ways, of approaching them.

### **Limitations**

The following are limitations of the study regarding PDS and traditional pre-service teachers who were analyzed within this study. These limitations should be noted while considering the findings associated with this study.

This study was limited to only Macon University graduates that participated in the two-year elementary education completion program established by Macon University. Pre-service candidates entered the two-year program after successfully completing general education requirements from different colleges or universities and meeting the entrance requirements of Macon University.

Although demographic data were analyzed, manipulation of the independent variable has occurred through candidate self-selection of either the PDS or traditional pre-service teacher programs, thus creating a limitation of the study.

A wide range of preparation for MAP tests varies from class to class or district to district. Lack of control based on individual student preparation and district professional preparation cause a limitation of this study.

The data affiliated with this study was limited to only Macon University and cannot be generalized to any other university in the state of Missouri.

### **Recommendations**

The following recommendations are made for further research and practice related to professional development school programs:

#### **Recommendations for further research**

**Statewide study.** This study should be expanded to more comprehensively examine all colleges and universities throughout the state of Missouri that participate in PDS programs due to

the medium-to-large effect sizes found (despite the non-significant findings between PDS and traditional teachers on the percentage of their students scoring non-proficient and proficient on the MAP test in communication arts and mathematics during their first year teaching). This study would help the state of Missouri and higher education institutions to gain an understanding of how the type of pre-service program impacts first year teachers' effectiveness. The Missouri Department of Elementary and Secondary Education could utilize district assessment data, while tracking institution and program type for each newly certified teacher. This study would be a longitudinal study based on program type and state assessment data. This recommendation of further study may also provide answers to the cause of the considerably large variance in P – 12 student scores, which may be a result of the pre-service teacher experience or the district in which the first year teacher teaches.

**Consider ethnicity.** An additional recommendation would be to specifically research ethnicity as related to demographics of PDS and traditional pre-service programs. The state of Missouri needs to consider if there is a difference in the racial makeup of PDS and traditional pre-service teacher programs. This recommendation could be an addition to research question on of this study if replicated.

**Teacher certification requirements.** This study calls for more quantitative and qualitative research focused on teacher certification requirements. With the ever-changing requirements of standardized assessments and the development and implementation of edTPA nationwide, common initial licensing practices should be evaluated to provide a more clear indication of teacher quality and the potential for increased P – 12 student achievement (Darling-Hammond L., 2010). Within this research, types of programs, including PDS and traditional pre-

service programs, can be evaluated to determine if there is a difference with regards to the “promise” and “effectiveness” of pre-service teachers.

### **Recommendations for Macon University and the State of Missouri**

**Male teacher education students in PDS programs.** Overall, PDS and traditional pre-service teachers were similar when examined by age, GPA, and CBASE English composite scores. While not surprising based on overall trends of elementary education candidates, there were a small number of males within the samples. The findings did indicate that there was a significant difference in the gender distribution of the PDS and traditional pre-service teacher groups when all graduates were analyzed; the traditional group had proportionately more males than the PDS group. Based upon the data from all graduates of Macon University, 90.4% were females and 9.6% were males, 98.8% of the PDS group was female with only 1.2% male, and 86.8% of the traditional group was females with 13.2% male. A program consideration must be the lower percentage of male enrollment within the PDS program. Macon University must determine why more males are choosing the traditional program over the PDS program.

Macon University must consider their practices to determine why a lower percentage of male pre-service teachers enroll in the PDS program. Questions to be considered are: Is the timing of coursework for the PDS program conducive to both males and females? How many males that attend Macon University are a head-of-household and must work while taking courses? Does this impact choice of PDS versus traditional pre-service program?

**GPA among PDS participants.** While the data in RQ1 showed a non-significant difference, the trend was towards higher GPA in the PDS group than the traditional group within the average GPA for all graduates being 3.46 and 3.38 respectively. This indication affords the question of: Is the higher GPA a reflection of the professors teaching the courses or the

backgrounds of the students? Macon University must continually examine the consistency of course grades to help provide answers to this question.

A reliability study should be created at Macon University to examine the consistency of course grades between professors teaching the same courses. This study would help identify possible answers to the questions posed above with regards to RQ1: Is the higher GPA (of PDS versus traditional pre-service teachers) a reflection of the professors teaching the courses or the backgrounds of the students?

**Praxis II scores.** There were not any statistically significant differences between the PDS and traditional pre-service teacher groups for the Praxis II composite scores. As a result of this, Macon University should continue to examine the Praxis II composite scores as related to PDS and traditional pre-service teachers.

Consideration should be given to reviewing entrance requirements for Macon University Teacher Education program as it relates to changes in educational reform and initial licensure requirements. Entrance requirements may need to be evaluated as the standards for teacher preparation programs increase.

Macon University should continue to examine the Praxis II composite scores as related to PDS and traditional pre-service teachers. Research, both quantitative and qualitative, should be developed to monitor the requirements of standardized assessments and the development and implementation of edTPA, as it relates to initial licensure requirements.

**MAP scores.** There was insufficient evidence to reject the null hypothesis for RQ3 based on the sample and methodology used within this study, thus no statistically significant differences were found between PDS and traditional teachers on the percentage of their students scoring non-proficient and proficient on the MAP test in communication arts and mathematics

during their first year teaching. When these analyses were completed, there was not a large enough sample size nor was the data distribution appropriate for the utilization of an independent samples t-test. With that in mind, it is interesting to note the medium-to-large effect sizes found and consider the relatively substantial differences between PDS and traditional teachers groups, despite the non-significant findings. Continued efforts on the part of Macon University need to examine, both quantitatively and qualitatively, the success of their graduates during their first year teaching.

**Replication.** This study should be replicated to a more comprehensive examination to include all colleges and universities throughout the state that participate in PDS programs in order to gain an accurate understanding of how pre-service programs impact first year teachers' effectiveness. This recommendation of further study may provide answers to the cause for the considerably large variance in P – 12 student scores, perhaps the pre-service teacher experience or the district in which they teach.

Replication of this study could be conducted in collaboration with one district that employs a large number of Macon University graduates and has instituted a common assessment in all grade levels. By partnering with one district, limitations would decrease due to a more controlled professional development program, new teacher induction program, and P – 12 student demographics. This future study would help Macon University and the collaborating school district to gain an understanding of how the type of pre-service program impacts first year teachers' effectiveness. This research would need to be a longitudinal study in order to gather a large enough sample size to effectively reach a conclusion.

Continued efforts on the part of Macon University need to examine, both quantitatively and qualitatively, the success of their graduates during their first year teaching. This could be

determined through state assessment data, formal teacher evaluation data and observations, among other means.

### **Recommendations for other stakeholders**

**There is no statistically significant difference between the PDS model and the traditional pre-service teacher model.** Based on the quantitative data analyzed in this study, there is no substantial reason to prefer a PDS-prepared teacher over a traditionally-prepared teacher. This study does provide preliminary, tentative evidence based on effect size analysis that teachers graduating from PDS preparation models may be more effective than those graduating from traditional preparation programs in increasing their students' state achievement test scores, particularly in mathematics. More research is needed to confirm or deny this preliminary finding.

**Executive summary of the findings.** Evaluating quantitatively, are teachers who graduate from programs that employ professional development schools more superior than those who graduate from traditional programs that do not employ the professional development school model? According to the data analyzed in this study, no, with only one notable exception. Teacher education students in the PDS program were found to be the same as teacher education students in the traditional model, except that there were fewer men in the PDS program. Teacher education certification examinations did not show statistically significant differences between the two models and student achievement scores in the graduates' classrooms were not statistically significantly different during the graduates' first year of teaching. The one notable exception is that the effect size analysis showed that teachers who graduated from the PDS pre-service teacher model were found to be moderately more effective when compared to the traditional pre-service teacher model with their students' higher state achievement scores, especially in

mathematics. More research, with larger sample sizes is warranted, before the PDS model can be deemed more effective an approach than the traditional model.

### **Closing**

The call for more intentional clinical practice has become increasingly more apparent in light of the reforms in both higher education and P – 12 education. The importance of examining the professional development school model versus the traditional pre-service teacher model provides an avenue for Macon University, among others, to effectively assess how best to move forward along the continuous improvement process. This study, including the recommendations of further research and practice, provides a course of action. It is imperative that teacher preparation programs evaluate their current teacher preparation practices. This evaluation must take into account how these college and university pre-service teacher education programs incorporate clinical experiences within their coursework to collaborate with teachers and administrators in the P – 12 setting. New teachers need to show promise within their pre-service experiences and be effective in the classroom to support the students they serve.

The findings in this study of PDS and traditional pre-service teacher programs provide the opportunity for reflection and evaluation of current practice and need further exploration. The state of Missouri continues to increase awareness of co-teaching as a model to utilize within the student teaching experience. This model fits within the parameters of the professional development school program. As pre-service teachers learn and develop new strategies for teaching, they are engaged in a community of practice where they can put their learned theory to work with students. The Holmes Group framework of the novice instructor, professional teacher, and career professionals, provides this framework for teacher preparation programs and P – 12 education settings to work together to provide effective instruction and promote student

achievement all through collaboration. This study provides considerations as colleges and universities evaluate their teacher preparation programs and determine how best to serve the needs of both teachers entering the field of education and the field of education itself.

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