A Comparison of Teacher Preparation Models and Implications for Teacher Attrition: Evidence From a 14-Year Longitudinal Study

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ABSTRACT: This large-scale, longitudinal study examines teacher attrition data from over 6,500 teachers in Illinois over a 14-year period from 1997 to 2010. Attrition rates between teachers who participated in a Professional Development School (PDS) versus students prepared traditionally are compared. The effects of teacher preparation experiences on persistence in education employment were examined for students participating in four different teacher preparation programs at Illinois State University. The findings indicate that PDS-prepared teachers are more likely to persist in employment as compared to their traditionally prepared counterparts and the education program area strongly influences persistence, perhaps more than teacher preparation model. These findings can inform teacher education programs and preparation in regard to resources allocation as well as pre-service field experience design.

NAPDS Essentials Addressed: #2/A school–university culture committed to the preparation of future educators that embraces their active engagement in the school community; #4/Engagement in and public sharing of the results of deliberate investigations of practice by respective participants.

Review of the Literature

For many years, educators and researchers have studied the issue of teacher attrition across various educational contexts (Hanushek, Kain, & Rivkin, 2004; Sass, et al., 2012; Kaiser & NCES, 2011). Although rates have fluctuated (DeAngelis & Presley, 2011), attrition remains a problem for a multitude of reasons including lower teacher and program quality, lower student achievement, and high costs (Ingersoll & Merrill, 2010). Specifically, early career teachers continue to leave at high rates (Henry, Bastian, & Fortner, 2011; Ingersoll, 2003; NCTAF, 2007). Because a top goal for teacher preparation programs is to help create successful new educators for the teaching field (DeAngelis & Presley, 2011), the attrition of early career teachers may be a lens through which to examine teacher preparation.

Reasons Teachers Leave

Although many post-hire reasons for attrition have been discovered, less research has looked into predicting which teachers will stay, move, and leave based on the type of teacher preparation model through which they were trained. Understanding the teacher preparation factors that may influence attrition could help to curb this issue. There are a myriad of personal reasons that cause teachers to leave the field including marriage, child rearing, etc., and the teacher education model cannot directly influence these. However, teacher education can have an impact on the school or climate-based reasons (e.g., inadequate administrative support, discipline, classroom management, lack of resources) teachers report for leaving the classroom (Gonzalez, Brown, & Slate, 2008; Holmes, Impink-Hernandez, & Ingersoll, 2001; Ingersoll & Merrill, 2010; Liu, 2007). Teacher education programs that provide extensive experience in schools and immerse pre-service teachers in the school culture may have the potential to prepare new teachers entering the field for the challenges they will face as novice teachers (Darling-Hammond, Hammerness, Grossman, Rust, & Shulman, 2005; Levine, 2002).

Some teacher education approaches, such as the Professional Development Schools (PDS) model, which extends the experiences in the school and immerses pre-service teachers in the real work of teaching, may better equip teachers to meet these school or climate-based reasons for leaving the field and perhaps more specifically prepare teacher candidates to persist in teaching. The purpose of this study was to examine from a large-scale, longitudinal perspective what impact a year-long immersion or internship model in a particular program area (e.g., early childhood, elementary, middle level, bilingual) might have on teacher attrition rates.

By far, the greatest loss of teachers from the profession occurs within a new teacher's first ten years (Alliance for Excellent Education, 2008; Liu, 2007). Although rates fluctuate from year to year, trends over the last fifteen years show overall increases in public school teacher turnover, which includes movers and leavers, from 13.5% in 1988-1989 to 15.6% in 2008-2009 (Ingersoll & Merrill, 2010; Keigher, 2010). National data

collected by the National Center for Education Statistics via its School and Staffing Survey (SASS) and Teacher-Follow-up Survey (TFS) have been collected since the late 1980s; these data continue to be gathered on approximately three million public school teachers. Based on this data, rates for leavers have increased from 5.6% in 1988-1989 to 8.0% in 2008-2009.

This unequal distribution is especially true for beginning teachers, as teachers leaving within the first three years of experience have also increased as compared to studies from previous years (Ingersoll & Merrill, 2010; Kaiser, 2011). Many reports over the past decade have highlighted the fact that 50% of new teachers leave by their fifth year (Alliance for Excellent Education, 2005; Lambert, 2006; NCTAF, 2007), but additional studies have found that this rate is actually between 39-46% for all public, private, full-, and part-time teachers (Boe et al., 2008; DeAngelis & Presley, 2007). First year public school teachers' turnover rates increased approximately seven percent from 1988 to 2004 (Ingersoll & Merrill, 2010). In Illinois, where this study took place, new teacher attrition is a statewide issue. In a 2007 report, the Illinois Education Research Council found that 44% of all new Illinois teacher entrants left (22%) or moved from (22%) their initial public school within the first two years, and of the teachers counted in the 67% attrition rate within the first five years, 37% were defined as leavers (DeAngelis & Presley, 2007).

Impacts of Teacher Attrition

Although different types of teacher turnover including temporary attrition and teachers moving from one school to the next may appear more benign than teacher attrition, all types of turnover are problematic for the profession (DeAngelis & Presley, 2007; Ingersoll & Merrill, 2010). All turnover leads to staffing problems with a decrease in staff and a need for recruitment, replacement, and training (DeAngelis & Presley, 2007) and perceived teacher shortages in certain areas (Ingersoll & Merrill, 2010). In a study by Barnes, Crowe, and Schaefer (2007), the cumulative cost of teacher turnover for all schools and districts across the country was found to be a staggering $7.34 billion.

In addition, constant turnover has negative impacts on student achievement (Alliance for Excellent Education, 2008; NCTAF, 2007). Teacher quality is crucial to student achievement. Research suggests that there may be a correlation between teacher persistence and students' academic performance. The longer a teacher stays in the field, the higher their students' academic performance tends to be (Aaronson, Barrow, & Sander, 2007; Alliance for Excellent Education, 2008). Some studies find that the lowest-quality teachers tend to have higher rates of turnover, and the more effective teachers tend to stay (Alliance for Excellent Education, 2008; Barnes et al., 2007).

Attrition and Teacher Preparation

New and beginning teachers, particularly, may be more exposed to the factors leading to their increased representation in the group considered leavers. Issues of isolation, difficult work assignments, lack of mentoring, reality shock, lack of principal support, unclear expectations, and classroom management all contribute to increased stress levels for new teachers who may have different commitment levels to the field as compared to their veteran counterparts of yesteryear (Anhorn, 2008; Ingersoll & Merrill, 2010). Survival tends to categorize the first year of teaching as teachers navigate discipline and overall management problems (Liston, Whitcomb, & Borko, 2006). Although these in-service concerns may seem separate from pre-service experiences, more is being uncovered about the role of teacher preparation in navigating these conditions, which have been shown to lead to teacher attrition.

In general, teachers who have received more extensive preparation including those from four- and five-year teacher education programs (Darling-Hammond, Chung, & Frelow, 2002) and those who received other specific training and student teaching experiences were more than fifty percent more likely to stay in the teaching profession than those without these kinds of preparatory experiences (Barnes et al., 2007; Ingersoll et al., 2012). The pre-service teachers' preparation experience provides an opportunity to build resiliency skills and at the same time a foundation of teacher efficacy by providing candidates with confidence through preparedness, which may affect their staying power in the field (Darling-Hammond et al., 2005; Levine, 2002).

Examples of these specific training and student teaching experiences are found in more recent research investigating the power of a partnership-based, immersion field experiences, or the PDS model. The term "PDS" was first coined by the Holmes Group in the mid-1980s, and today these programs exist across the United States, in communities of all sizes, economic levels, and cultural make-ups (Abdal-Haqq, 1998). Although this model can be defined in a variety of ways (Teitel, 2008), the National Association for Professional Development Schools (NAPDS) in 2008 more specifically defined a true PDS through its *Nine Essentials of a PDS*. These Nine Essentials differed from previous PDS definitions offered by the National Council for the Accreditation of Teacher Education (NCATE) in that they centered more on the specific practices positively impacting learning, teaching, and teacher preparation through collaborative partnership as opposed to centering on the year-long internship. These practices include commitment of all partners to future teacher preparation; in-service teacher professional development; innovative practice; shared resources, roles, and collaborative support; and established agreed upon governance structures.

While establishing these partnerships can be challenging for universities and school districts, and at times the model has been criticized for the fiscal, temporal, and human resources it demands (Breault & Breault, 2010), it has also been hailed as an integral element of school reform (Breault & Breault, 2010; Teitel, 2008). Studies have found benefits of the PDS model for both student achievement and pre-service teacher preparation (Castle et al., 2008; Ridley, Hurwitz, Hackett, and Miller, 2005; Castle, Fox, and Fuhrman, 2009).

Strengths of the PDS model may have an encouraging impact on overall new teacher attrition as well. Yet few studies in the teacher attrition literature have examined the impact of this specific teacher preparation model on persistence in the field. Of these studies, findings have varied. Some have found positive correlations between PDS preparation and teacher persistence in the first three years (Fleener, 1998; Kenreich, Hartzler-Miller, Neopolitan, & Wiltz, 2004) and studies have also correlated teachers' positive feelings about their preparation with higher retention, especially when that preparation included clinical practice opportunities (Darling-Hammond & Youngs, 2002). Grisham, Berg, and Jacobs (2002) found in their study of the lasting impact of the PDS model on teachers that participation in a PDS can have far-reaching, positive impacts on teachers' careers up to fifteen years into their career. However, another PDS study conducted by Reynolds, Ross, and Rakow (2002) found no real difference in retention rates between PDS-prepared and non-PDS prepared teacher candidates.

Ultimately, to date, little empirical research on the question of PDS effects has been completed, and research that is both longitudinal and involving a large number of participants is a less frequent occurrence. Fleener (1998) conducted a comprehensive study investigating 2,000 teacher candidates (half PDS-prepared and half non-PDS-prepared) entering the teaching field after 1993 in Texas and found that the attrition rate of the PDS graduates was a third of the graduates from the non-PDS programs. More recently, the authors of this article conducted a large-scale study comparing 1,067 Illinois public school teacher graduates from Illinois State University. Both the PDS and non-PDS model were examined over the course of nine years (Latham & Vogt, 2007). This study found that pre-service teachers prepared in the PDS model were significantly more likely to get a job in an Illinois public school and also significantly more likely to persist in the field, even when controlling for demographic variables such as, race, gender, and program admittance status (Latham & Vogt, 2007). This research is now also dated and scholars', states', and accreditation bodies' capabilities to investigate this topic have expanded, providing an opportunity to paint a clearer picture of the power of teacher preparation models for predicting teacher attrition.

Research Purpose

The purpose of this study is to examine what, if any, impacts teacher preparation model (non-PDS vs. PDS) and program study areas (early childhood, elementary education, middle level education, or bilingual education) have on teacher attrition rates. Specifically, this study examines two questions:

1. What are the general attrition and employment trends for the teacher education graduates at Illinois State University, by program (early childhood, elementary, middle level, bilingual), based on program graduates employed in the state's public schools between 1996 and 2011?
2. What are the effects of a PDS preparation experience on persistence in employment in Illinois public schools for these teacher education candidates?

For the purposes of this study, we use the definitions of our state's certification criteria: the early childhood (ECE) program prepares future teachers to teach infants through grade three; the elementary education (ELE) program prepares future teachers to teach kindergarten through grade nine; the middle level education (MLE) program prepares future teachers to teach grades six through eight; and the bilingual education (BIL) program prepares teacher candidates to teach kindergarten through grade nine in both English and Spanish.

Research Methodology

This study examined the effects of teacher preparation experiences on employment in Illinois public schools and persistence in teaching in these schools. Illinois State University (ISU), which served as the setting for this study, was founded as a "normal school" with deep, historic roots in teacher preparation. Illinois State currently educates more teachers in the state than any other institution of higher education and is one of the top five universities preparing teachers in the country. Since 1993, nearly twenty elementary, middle level, early childhood, and secondary PDS partnerships have been developed. These relationships have evolved over the past two decades. Some of the established partnerships have continued and others have ended; all represent varying degrees of the NAPDS Nine Essentials of the PDS model. However, all of the institution's enhanced partnership field experiences in this study included a yearlong student teaching experience and more intense clinical supervision as compared to the traditional student teaching model, which is typically comprised of a sixteen-week experience. Teacher candidates in these intensive internship PDS programs participate in a yearlong student teaching/clinical experience as part of a cohort, more intensive clinical supervision, and shared professional development.

Study Sample and Data Sources

The current study examined teacher employment trends and attrition rates over a fourteen-year period from 1997 to 2010. The study sample included early childhood, middle level, elementary, and bilingual program graduates from this institution, resulting in a study sample of 6,649. The data for the study were obtained from three sources: (a) the Teacher Education Center and the Department of Curriculum and Instruction at the authors' institution; (b) the state's Teacher Service Record prepared by the State Board of Education; and (c) student demographic and descriptive information maintained centrally by the university.

Table 1. Sample Demographics (by Program Type and Overall)

	PDS Program		Non-PDS Program		Overall	
Demographics	*Number*	*Percent*	*Number*	*Percent*	*Number*	*Percent*
Gender						
Female	1,094	94.4	4,975	90.6	6,069	91.3
Male	65	5.6	515	9.4	580	8.7
Ethnicity						
Caucasian	1,026	90.0	5,091	93.4	6,117	92.8
African American	17	1.5	180	3.3	197	3.0
Hispanic	73	6.4	103	1.9	176	2.7
Other[a]	24	2.1	74	1.4	98	1.5
Admission Type						
Four-year	783	67.6	2,764	50.4	3,547	53.4
Transfer, community college	293	25.3	2,137	39.0	2,430	36.6
Transfer, 4-year institution	57	4.9	381	6.9	438	6.6
College graduate	25	2.2	201	3.7	226	3.4
Program area						
Early childhood	105	9.1	876	15.9	981	14.8
Elementary	867	74.8	3,902	71.1	4,769	71.7
Middle level	92	7.9	690	12.6	782	11.8
Bilingual	95	8.2	22	0.4	117	1.8
Program type						
PDS					1,159	17.4
Non-PDS					5,490	82.6
Totals					6,649	100

[a]The category ''other'' includes candidates that identified themselves as American Indian or Alaskan Native, Asian, Multiple races, or non-resident alien. In addition, 61 candidates provided no response.

Sample Demographics

The demographics for the 6,649 participants in the study sample are contained in Table 1. With regard to gender and ethnicity, the sample is somewhat homogenous; 90% are female and 93% identify as white/Caucasian. Individuals identifying as African-American (3%), Hispanic (2.6%), American Indian or Alaskan Native (0.2%), Asian (1.2%), and multiple races (0.1%) constituted only seven percent of the sample. For the purposes of statistical analyses, the ethnicity variable was collapsed into two categories: (1) minority (including African-American, Hispanic, American Indian/Alaskan Native, Asian, and multiple races); and (2) majority (white/Caucasian).

Over half (53.4%) of the participants in the study were identified as four-year university candidates, meaning that these teacher candidates attended the university for all four years of their undergraduate degree. Community college transfer candidates constituted over a third (36.6%) of the sample, followed by transfer candidates from other four-year institutions (6.6%), and college graduates returning for a teaching degree (3.4%). With regard to program major, 72% of the sample was elementary education program graduates. The remaining sample was comprised of early childhood graduates (14.8%), middle level graduates (11.8%), and bilingual graduates (1.8%).

The majority of candidates in the current sample participated in a non-PDS teacher preparation program (82.6%), compared to 17% that participated in a PDS program. For the purposes of this study, a PDS program was defined as a culminating student teaching experience lasting a minimum of one academic year. This was an intentionally inclusive definition encompassing several different PDS models. The university currently supports numerous PDS models across the state in early childhood, elementary, middle level, and bilingual programs. The PDS effects being measured were not specific to one type of PDS program experience (i.e., elementary) and therefore may be more generalizable.

Study Variables

The dependent variable examined in this study was the number of years persisting in teaching (years employed) in a state public school. This variable was examined from two perspectives. Teachers' careers were examined in two stages. First, did the graduates become employed in a state public school? Second, if they were employed, how long did they remain employed?

Independent variables in the current study include several demographic, categorical variables including gender, ethnicity, program study area, and university admission type. The primary explanatory variable was the type of teacher preparation program—PDS program or non-PDS program. The main outcome variable was the number of years teachers continued to teach after initial employment. Since teachers in the sample entered the profession in different years, the number of years

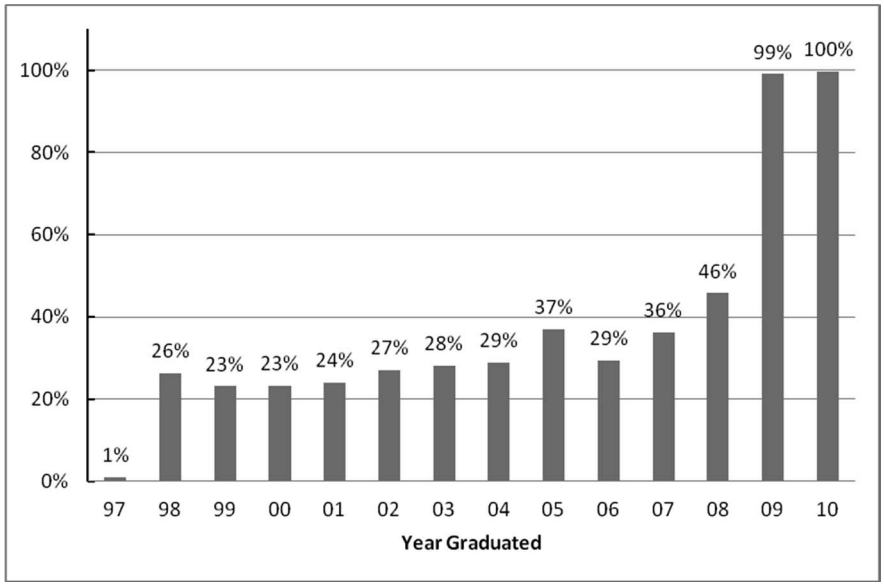

Figure 1. Percentage of graduates never employed in state schools by graduation year

they taught (employed) was compared to the number of years they could have been employed.

Employment trends for graduates were analyzed in two specific ways. First, it was determined whether graduates were ever employed in a state public school. This dichotomous variable was coded as either "yes" or "no." Second, it was necessary to measure the number of years a graduate was not employed in the field of education in the state. This was determined by examining the number of years a subject could have possibly been employed in education and then subtracting the number of years they actually were employed. For example, a 2002 graduate could have been employed for eight years (2010 minus 2002). If they were only employed for four of those years, their total years not employed would equal four years.

Analyses and Findings

Of the 6,649 graduates in this study, 63% became employed during some point from 1996 to 2010 in a state public school. Employment trends for graduates from 1996 through 2008 reveal a slight increase (approximately 20%) in the number of graduates never employed in public schools. However, as indicated in Figure 1 the percentage of graduates never employed for 2009 and 2010 is nearly 100%. This may indicate a "lag time" in district reporting and/or state collection of data between graduation date and date of first employment. These data obviously reflected then-current economic conditions in the state and, most likely, nationwide. Future analyses of these longitudinal data will provide an opportunity to address this issue and determine whether this is an anomaly in the employment data or an actual employment trend within the state.

Impact of Demographic Variables

To examine the effect of the independent demographic variables on whether graduates had ever been employed in a state public school (a dichotomous yes/no variable), chi-square test statistics were generated from contingency table analyses. Statistically significant relationships were found between ever being employed and ethnicity (χ^2=7.92), program area (χ^2=23.72), and preparation program type (χ^2=6.13) (Table 2). Graduates who were never employed are more likely to be non-minority (37.7%), early childhood majors (42.4%), and PDS program graduates (40.7%). Neither gender nor admission type appeared to have any significant impact on gaining employment.

In order to study the impact of demographic characteristics on persistence in the field or the number of years not employed (a continuous, interval level variable), it was necessary to utilize both t-tests and an analysis of variance (ANOVA). Three of the demographic variables—gender, ethnicity, and program type—are dichotomous so a t-test of independent samples was employed. The t-test revealed that only ethnicity had a significant effect on years not employed (t=−6.75, $p < .001$). Specifically, non-minority candidates had a higher number of average years not employed in education (3.35 years) compared to minority graduates (2.35 years) (Table 3). Gender and preparation program type were not found to be significantly related to years not employed in education.

Two of the demographic variables in this study—admission type and program type—contain four categories; therefore, an ANOVA was conducted to address their impact on years not employed in education. As can be seen in Table 4, both variables had a statistically significant impact on years not employed in education. A post hoc analysis (Scheffé) of the admission type variable revealed that the significant difference could be attributed to one group: four-year candidates. The mean number

Table 2. Demographic Characteristics by Employment Status in State Public Schools

	Never Employed		Employed		
Demographics	*Number*	*Percent*	*Number*	*Percent*	χ^2
Gender					1.29
Female	2,290	91.8/37.7[a]	3,779	91.0/69.3	
Male	205	8.2/35.3	375	9.0/64.7	
Ethnicity					7.92**
Minority	147	6.0/31.2	324	7.8/68.8	
Non-minority	2,307	94.0/37.7	3,810	92.2/62.3	
Admission type					4.30
Four-year	1,359	54.5/38.3	2,188	52.7/6137	
Transfer, community college	893	35.8/36.7	1,537	37.1/63.3	
Transfer, 4-year institution	150	6.0/34.2	288	6.9/65.8	
College graduate	91	3.7/40.3	135	3.3/59.7	
Program area					23.72***
Early childhood	416	16.7/42.4	565	13.6/57.6	
Elementary	1,769	70.9/37.1	3,001	72.2/62.9	
Middle level	286	11.5/36.6	496	11.9/63.4	
Bilingual	25	1.0/21.4	92	2.2/78.6	
Program type					6.13*
PDS	472	18.9/40.7	687	16.5/59.3	
Non-PDS	2,023	81.1/36.8	3,467	83.5/63.2	

*$p < .05$ ** $p < .01$ *** $p < .001$.

[a]First number represents percentage within column. Second number represents percentage with row.

of years not employed for this group was 2.89 compared to 3.67 and higher for the other three groups (Table 4). Post hoc analyses of preparation program type found similar results. The mean years not employed for the bilingual program graduates (0.91) was statistically lower as compared to the other three categories (2.68 and higher) (Table 4).

Multivariate Analyses and Findings

Multivariate analyses were conducted to examine the combined effects of the independent variables on the outcome variables. In order to examine the effect of multiple, independent, demographic variables on the number of years not employed, it was necessary to conduct a multiple regression analysis. The results of the linear regression are summarized in Table 5. Since all of the demographic variables were nominal categorical variables, it was necessary to dummy code the variables so as to include them in the regression analysis (Agresti, 1996). The dummy codes for the gender, ethnicity, and program area variables are included in Table 5. Program major and admission type each have four categories and the dummy codes are included in Table 5. The comparison group for program major is the elementary education major group and the comparison group for admission type is four-year teacher candidates.

The regression analysis examining the relationship of preparation model on persistence in education (years not employed), controlling for graduates' demographic variables, is summarized in Table 5. PDS program preparation was significantly related to persistence in education ($p<.001$). An additional finding from this analysis is that program majors in bilingual and middle level education were also significantly more likely to persist in education ($p=.016$ for bilingual majors and

Table 3. Group Differences for Persistence in Education by Gender, Ethnicity, and Program Type

Demographic Groupings	*N*	*Mean (Years out of Education)*	*Std. Dev.*	*t*	*p*	*Cohen's d*
Gender						
Female	6,069	3.25	3.06	−1.02	.31	−0.04
Male	580	3.38	3.40			
Ethnicity						
Minority	471	2.35	2.66	−6.75	.00	−0.3
Non-minority	6,117	3.35	3.11			
Program type						
PDS	1,159	2.01	2.20	15.40	.00	−0.5
Non-PDS	5,490	3.52	3.18			

Table 4. Means, Standard Deviations, and One-Way Analyses of Variance for the Effects of Admission Type and Program Area on Persistence in Education

Demographic Groupings	*N*	*Mean (Years out of Education)*	*Std. Dev.*	*F*	*p*	η^2
Admission Type				37.0[a]	.00	.02
Four-year	3,547	$2.89_{a,b,c}$	2.84			
Transfer, community college	2,430	3.67_{c}	3.24			
Transfer, 4-year institution	438	3.73_{b}	3.34			
College graduate	226	3.71_{a}	3.61			
Program area				36.43[b]	.00	.02
Bilingual	117	$0.91_{d,e,f}$	1.25			
Early childhood	981	3.54_{d}	3.12			
Elementary	4,769	3.35_{e}	3.08			
Middle level	782	2.68_{f}	3.03			

Note. Means in a column sharing subscripts are significantly different from each other ($p<.05$). For all measures, higher means indicate more years not teaching in education. [a]$df = 3$, 6,637. [b]$df = 3$, 6,645.

$p<.001$ for middle level majors). The coefficients for gender ($p=.037$), ethnicity ($p<.001$), college transfers ($p=.075$), and college graduates ($p=.010$) were also significant, indicating that females and non-minority candidates, in addition to college transfer candidates and college graduates, were less likely to persist in teaching in state public schools. This finding related to females and non-minority candidates persisting less may be related to the overwhelming number of female (91%) and non-minority candidates (93%) in the study sample. The most powerful predictor of persistence in teaching was having been prepared in a PDS program ($\beta=-.138$) (Table 5).

Lastly, in order to examine the relationship between the independent demographic variables and the dependent, dichotomous variable—ever employed in a state public school (yes/no)—it was necessary to employ a logistic regression analysis. This analytical technique is designed to predict the effect of preparation program model while controlling for an individual's academic and demographic characteristics. The analysis revealed two significant predictors of employment in teaching (Table 6). First, graduates with a bilingual major were significantly ($p=.034$) more likely to become employed in state public schools. Second, early childhood majors ($p<.001$), junior college transfers ($p=.011$), and, interestingly, PDS program graduates ($p=.008$) were statistically less likely to be employed. These findings mirror the descriptive analyses.

Summarizing, the most critical finding was that PDS program graduates were significantly more likely to persist in the field. Graduates identified as ethnic minorities, four-year teacher candidates, and graduates of the bilingual and middle level programs were the most likely to spend more years in the field of teaching in a state public school. Early childhood program graduates, non-minorities, and PDS program graduates were less likely to ever become employed in a state public school.

Discussion and Implications

The findings from this longitudinal study of more than 6,500 teacher education program graduates and fourteen years of employment data are significant and have clear implications for teacher education and future research directions. There were three interesting and significant findings to note: (1) PDS-

Table 5. Regression Analysis Summary of Demographic Variables Predicting Persistence in Education

	B	*SE B*	β	*t*	*Sig.*
(Constant)	7.389	.448		16.491	.000
PDS (yes=1, no=0)	−.992	.140	−.138**	−9.561	.000
Gender (female=1, male=0)	−.342	.164	.030*	2.086	.037
Ethnic (white=1, others=0)	.853	.155	.078**	5.512	.000
Major: bilingual[a]	−.860	.358	−.034*	−2.405	.016
Major: early childhood [a]	.172	.116	.021	1.478	.140
Major: middle level[a]	−.886	.130	−.098**	−6.803	.000
Admission: junior college transfer[b]	.539	.107	.075**	5.022	.000
Admission: college transfer[b]	.355	.199	.025	1.780	.075
Admission: college graduate[b]	.916	.355	.036*	2.578	.010

Note. Adjusted R Square = .080 *$p = < .05$, **$p = < .001$.

[a]Comparison Group: Elementary Education.

[b]Comparison Group: Four-year ISU Teacher Candidates.

Table 6. Summary of Logistic Regression Analysis of Demographic Variables Predicting for Never Becoming Employed in Education (Yes/No)

	B	*SE B*	*Wald*	*Sig.*
PDS (yes=1, no=0)	.202	.077	6.942	.008**
Gender (female=1, male=0)	.063	.123	.261	.610
Ethnic (white=1, others=0)	−.191	.116	2.724	.099
Major: bilingual[a]	.603	.284	4.513	.034*
Major: early childhood [a]	.316	.086	13.552	.000***
Major: middle level[a]	−.001	.098	.000	.988
Admission: junior college transfer[b]	.206	.080	6.530	.011*
Admission: college transfer[b]	−.148	.153	.993	.334
Admission: college graduate[b]	.423	.261	2.628	.105

*$p = < .05$, **$p = < .01$, **$p = < .001$.

[a]Comparison Group: Elementary Education.

[b]Comparison Group: Four-year ISU Teacher Candidates.

prepared teachers are more likely to persist in public school employment as opposed to their non-PDS prepared counterparts; (2) candidates who begin and complete all four years at the institution are more likely to become employed and persist in that employment; (3) education program area strongly influences persistence, perhaps even more than teacher preparation model.

Effects of a PDS Preparation Experience on Persistence in Employment

Teacher attrition is often examined from the perspective of the reasons teachers leave, which are related to school, district, or community characteristics. Teacher attrition is also often studied from the perspective of labeling the teacher as a leaver, mover, or stayer. However, this study suggests that teacher preparation model can be used as a powerful predictor of teacher persistence in the field. Even when controlling for individual participant demographic and academic characteristics, PDS prepared teachers were positively and significantly more likely to persist in the field.

As models of teacher preparation continue to be studied, examined, and critiqued, teacher attrition should be included in that examination. This research included a teacher preparation model that was defined as including a yearlong clinical student teaching experience. Other components, as outlined in the NAPDS Nine Essentials (2008), that should also be examined as possible mediating variables include: the partnership structure, roles, responsibilities, and governance; the degree of innovation, reflective practice, and support across the educational settings; and resources and professional development available at each site.

Additionally, the PDS participants in this study volunteered to be a part of the PDS, which could mean they have a more career-dedicated disposition to begin with and therefore may have persisted in the field longer even with non-PDS preparation. In a 2009 study, this question was asked of 204 elementary education majors after making their student teaching choice but before entering the PDS or non-PDS portion of their preparation programs. Although all participants were found to provide "career-minded" reasons for their choice of model (PDS or traditional), PDS candidates also provided more "career-minded" reasons as compared to non-PDS candidates, however not significantly (Latham & Wedwick, 2009). These findings minimize the presumption that those volunteering for the PDS experience were more committed to begin with and would have persisted regardless of teacher training model.

Four-Year Teacher Candidates and Employment and Persistence

Compared to candidates transferring from another institution, four-year candidates were significantly more likely to obtain a teaching position initially and to persist once employed. In addition, these candidates spent less time out of the field of education (2.9 years), as compared to all other student groups in the sample (3.7 years). Further research is needed to examine these trends over time and to examine emerging patterns through the lens of economic indicators at specific times. For example, early childhood candidates, as compared to all other study participants, have a variety of employment options (e.g., Head Start, private child care centers and preschools, faith-based preschools, early intervention programs and home visitor programs); however, these employment data were not available in the data sources used for this study. An examination of admission status as a predictor of persistence in the field is an important factor for both four-year institutions and community colleges and warrants further consideration in future studies.

Program Area, Employment, and Persistence in the Field

By utilizing a complete census of institutional graduates and studying a longer time period, researchers were able to examine attrition trends by program area. The type of program, whether early childhood, elementary, middle level, or bilingual education, was included as a variable in this study due to the

substantial number in each group. As seen from the results of the analysis of variance (see Table 4), bilingual education majors were statistically more likely to obtain a teaching position and persist in it. The findings, however, related to obtaining a teaching position initially may be due to the major changes in the state economic climate in recent. Even though teacher employment statistics project a 13% increase in the need for teachers between 2008 and 2018 (Bureau of Labor Statistics, n.d.), both hiring and recruiting of new teachers has followed national trends in this state and slowed considerably in the last five years (American Association of School Administrators, 2011).

In regard to persistence, the average number of years out of education was less than one year (0.9) versus 2.7 years for middle level majors, 3.4 years for elementary majors, and 3.5 years for early childhood majors (see Table 4). The reasons for this finding are not surprising in any simple examination of teacher shortage areas, especially in high needs schools, both in this state and across the country (Sakash & Chou, 2007). Bilingual teachers prepared in their content area and prepared to teach in both their native and a second language are in high demand (Fowler, 2009; Kersten, 2008).

Study Limitations

Although this study contributes to and informs the PDS and attrition literature, there are some limitations to the study, which may reduce some of its generalizability and should be acknowledged. First, participants in this study were limited to graduates from Illinois State University. Second, employment records available through the state department of education are limited to those teachers employed only in Illinois public schools; therefore for the purposes of this study, participants teaching in private schools, teaching out of state, or moving into positions in school administration or higher education would be considered "leavers." Third, this study includes only graduates from the early childhood education, elementary education, middle level education, and bilingual education programs; it does not include any secondary education graduates. In addition, we acknowledge the unequal distribution of the study participants across the varying program areas (71% in elementary education, 17% in early childhood education, 11% in middle level education, and 1% in bilingual education).

Another limitation was the result of the study variables; as a consequence it was not possible to differentiate if a teacher left the field of teaching on a voluntary or involuntary basis. Lastly, the very specific definition of a PDS used for the purposes of this study can also be seen as a limitation. Because of the longitudinal nature of this study at a large teacher education institution, many PDS partnerships are represented within these findings. Both the NAPDS essentials and the NCATE (now Council for Accreditation of Educator Preparation or CAEP) components of a PDS can be seen in part or whole in the partnerships represented. However, all of the institution's enhanced partnership field experiences in this study included a yearlong student teaching experience, more intense clinical supervision, and shared professional development.

Although the current study has several limitations, it is comprised of a relatively large sample from one of the largest institutions preparing teachers in the country and addresses a significant issue in teacher education—teacher attrition. Subsequent studies could include multi-institution and/or multi-state samples to better address the issues related to teacher attrition and for greater generalizability of findings.

Conclusion

Further research is needed to continue to identify persistence patterns in the field as well as employment moves within the field, moves to administration, and moves out of the field and back in again. Additionally, the finding that PDS candidates were less likely to become employed needs further investigation as well. Studies that investigate the types of schools candidates are prepared in and then persist in would also add to the predictive weight of the preparation model and persistence. Additional qualitative examination of the reasons candidates leave could add to these findings as well as an examination of the characteristics of the schools they persist in as compared to the characteristics of the schools they are prepared in. An examination of these participants not just for those employed or persisting in a state public school, but also those in schools in other states, private schools, and an analysis of other field choices could also further inform this study. Additionally, as the state improves its ability to track student performance data with classroom and teacher characteristics and demographics, additional analyses can focus on the impact of teacher preparation models on student achievement and learning.

The current study found that being a PDS-prepared teacher significantly and positively affects how long teachers will remain in the field of education. These findings have powerful implications for teacher education. However, these findings also continue to raise additional research questions to further inform teacher preparation models and practices. SUP

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