



A Longitudinal Investigation of the Relationship between Teacher Preparation and Teacher Retention

By Guili Zhang & Nancy Zeller

Few issues in education threaten the nation as seriously as the present and growing shortage of teachers. Teacher attrition is high among teachers across the nation and is one of the most serious causes of teacher shortage (Ingersoll, 2004). As policy makers rush to address this problem, research is needed to examine the retention effects of policy decisions regarding various elements affecting teachers' decisions to remain in or leave the profession.

In recent years, there has been growing popularity of alternative teacher certification, which is largely due to the serious teacher shortage across the country (Cochran-Smith et al., 2011). In 2004, 43 states, plus the District of Columbia, reported having some type of alternative route for certifying teachers, whereas only 8 states said they had alternative routes in 1983 when the National Center for Education Information began collecting such data. In states like California, New Jersey, and Texas, which have been pursuing alternative routes since the mid-1980s, 20% or more of new teachers enter the profession through alternative routes.

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Relationship between Teacher Preparation and Teacher Retention

Alternative route certification programs (ARC) have been specifically designed to recruit, prepare, and license talented individuals who already have at least a bachelor's degree. Candidates must pass a rigorous screening process. ARC programs are field based and include course work or equivalent experiences while teaching. Candidates of the program work closely with their mentors in preparation to meet the high performance standards required for completion of the program (Office of Innovation and Improvement, 2004).

In the report of the Education Commission of the States, the commission raised the important question of whether there are alternative route programs that graduate high percentages of effective new teachers with average or higher than average rates of teacher retention (Allen, 2003). The report concluded that retention rates for alternative routes can be comparable to those of traditionally prepared teachers over the short term, but with regard to long-term retention, the research on this issue has to be regarded as inconclusive. This study aims to look at long-term retention effects of alternative route teacher preparation programs and traditional teacher preparation programs.

Purpose

Teacher retention is important because teacher turnover creates instability and costs and negatively impacts teaching quality—especially in schools that most need stability (Donaldson & Johnson, 2011). During an interview in 2013, professor and researcher Richard Ingersoll stated that anywhere between 40% and 50% of teachers will leave the classroom within their first 5 years. This percentage includes the 9.5% who leave before the end of their first year (Riggs, 2013).

Ingersoll (2004) used the term the *revolving door effect* to describe the frustrating cycle that occurs at at-risk schools that continually search for new teachers to replace the ones who leave. When qualified teachers leave in just a few years, they need to be replaced by novice teachers, which incurs substantial costs. According to the U.S. Department of Labor (as cited by Alliance for Excellent Education, 2005), school systems in the United States spent \$4.9 billion on teacher turnover in 2005. More important than monetary cost is the cost to student academic well-being: Continuously replacing experienced, effective teachers with novice teachers causes students to be taught by a stream of inexperienced, first-year teachers.

Research is needed to explore new, alternative routes to teaching careers that can result in good retention. The purpose of this study was to examine one important factor related to teacher retention: *type of teacher preparation*. There appears to be three main routes to a teaching career:

- Teachers can complete a *regular*, accredited, baccalaureate-level college- or university-based teacher education program.
- Teachers can enter the profession through a *lateral entry alternative*

licensure program: a sink-or-swim route to teaching that allows qualified individuals to obtain a teaching position and begin teaching immediately, while earning a license as they teach. Lateral entry teachers must complete specific courses toward licensure within a specified period of time. To be considered for lateral entry, individuals must have a bachelor's degree from an accredited college or university.

• Teachers can complete a *special alternative licensure program* designed to ease non-education majors into teaching and support them in a teaching career. For example, the NC Teach program in North Carolina is one such alternative method of preparing new teachers. NC Teach focuses on recruiting, preparing, and supporting high-quality, mid-career professionals who want to enter teaching through an alternative licensure route. NC Teach is a year-long program with 5 weeks of essential skills in the summer. It is designed for persons who have less than 1 year of teaching experience or who plan to teach while earning a license. It involves 12 semester hours of graduate work.

Perspectives

As the need for teachers has mushroomed out of control nationwide, researchers have attempted to identify factors related to teacher retention. Among factors studied have been the role of the principal (David, 2003), and the administration in general, which encourages and promotes teachers' ideas (Inman & Marlow, 2004). Closely related is the factor of mentoring or counseling (Brown, 2003; David, 2003; Hoerr, 2005; Inman & Marlow, 2004). Inman and Marlow (2004) also found that collegiality and positive attitudes about teachers in the community are related to teacher retention. Johnson and Birkeland (2003) identified both school support and success with students as positive factors in retention. Hanson, Lien, Cavalluzzo, and Wenger (2004) found that higher teacher pay increases the likelihood that a person will continue to teach. Buckley, Schneider, and Shang (2005) found that facility quality in Washington, D.C., was an important predictor of teachers' decisions to leave their positions, even when controlling for other variables. Reynolds and Wang (2002) explored the effect of having attended a graduate program linked to a professional development school (PDS) and found no difference in retention rates between teachers who had attended a PDS-linked program and those who did not.

In 2011, the Gates Foundation (as cited in Smollin, 2011) polled 40,000 teachers about job satisfaction. The results showed that the majority of those polled teachers agreed that supportive leadership, time for collaboration, access to high-quality curriculum and resources, clean and safe buildings, and relevant professional development are even more important than higher salaries. Working conditions in many public schools remain far from ideal, especially for beginning

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teachers, who are most likely to be assigned to the highest need schools. Despite the added challenges they face, these teachers are often given few resources and little professional support (Smollin, 2011).

Researchers have also come to conclude that teacher attrition rates are, in part, due to the level of education received as well as the quality of the program itself. Jorissen (2002) believed it is the level of preparation that influences satisfaction in teaching, which inevitably determines a teacher's decision to stay or go. Jorissen summarized that the longer preparation programs, which combine pedagogical training with a supervised field experience, are more likely to produce teachers who are satisfied and committed to remaining in teaching.

A multitude of ARCs are available to prospective teachers, some displaying higher success rates than others. Those who support alternative route to certification programs claim that the participants are highly motivated to enter the teaching profession and that they fill critical shortages in specific subjects and school districts (Alger & Norman-Gloria, 2009). Teach for America (TFA) is the most well renowned alternative certification program in the United States. Much research has shown that TFA produces the same quality teachers as the traditional university program, although student test scores sometimes show otherwise (Wilson, 2011). Often, the great debate focuses on the value of teachers' subject-matter knowledge and their pedagogical skills; the amount of preparation a new teacher receives in these areas is determined by the path he or she followed into teaching (Ingersoll, Merrill, & May, 2012). Many attribute the success of TFA to minimized traditional teacher preparation requirements, also known as deregulation. Deregulation advocates argue that the course work offered by traditional preparation programs can be arbitrary, unchallenging, and excessive (Maier, 2012). Maier also showed that TFA members, unlike their traditionally prepared colleagues, are provided a valuable credential as a reward for their 2-year service. If this reward also contributes to turnover, then it does so at a cost to the students, parents, and communities that TFA serves. At this point, nearly two-thirds of TFA teachers continue as public school teachers beyond their 2-year commitments (Donaldson & Johnson, 2011).

Another form of ARC is the PDS. Most of the published studies of PDS retention and preparation favor PDS preparation over more traditional types of teacher education and have found no differences between PDS and non-PDS graduate retention from one institution, but the percentage of PDS graduates who expected to remain in teaching exceeded the percentage for non-PDS graduates. Moreover, PDS graduates felt more satisfied with their preparation than did non-PDS graduates (Reynolds & Wang, 2005). Latham and Vogt (2007) also found that PDSs significantly and positively affect how long teachers remain in education. Individuals who completed the Alternative Certification for Teaching (ACT) program also reported feeling well prepared for teaching and were supported by a statistical comparison of attrition rates to traditional programs. The ACT program has shown to be one of the most preferred alternative routes to teaching (Stanley & Martin, 2009). The

Teaching Fellows program is a highly competitive and desirable urban alternative certification program in New York City that was developed in response to teacher shortages. This program was found to have a higher attrition rate than most ARCs, likely because of the high level of intensity and demanding immersion experience (Malow-Iroff, O'Connor, & Bisland, 2007).

In North Carolina, educators have developed a number of special alternative licensure programs (Simmons & Mebane, 2005). Regarding other states, a report of the National Commission on Teaching and America's Future (Hunt & Carroll, 2002) identified high-quality alternative licensure programs in California, Colorado, and Missouri, programs that have reported retention rates of 80% or higher. Fox and Duck (2001) described a similar program at George Mason University, and Heyman (2002) compared a special alternative licensure program with the traditional licensure program at the Metropolitan State College of Denver.

To address growing shortages of qualified teachers, while providing the best education opportunities for all students, the School District of Hillsborough County, Florida (SDHC), created its Alternative Certification Program, offering teaching and training opportunities to noneducation majors. In the 1980s, Florida's State Department of Education had put alternative programs in the state universities, but over time it became clear that the alternatives were no longer alternative. According to SDHC's director of training and staff development, these alternatives had "folded right into the university as a straight graduate program." In 1997, the legislature decided to give districts the option of creating their own alternative programs. Hillsborough's program was created in 1998–1999. SDHC's general hiring practice for a long time was to first seek experienced teachers from other districts, then experienced teachers from other states, followed by student teachers and, finally, alternative route teachers (Office of Innovation and Improvement, 2004).

Between July 1998 and June 2004, 530 teachers completed the ACP, with 87% remaining in the district. The overall completion rate of candidates is 98%, and the retention rate is 85%. The program attributes its success to its flexible, low-cost method for noneducation majors to enter the teaching field quickly. Based on lessons learned, program officers have stressed the importance of "buy-in" from administrators, human resources, and district staff development teams before starting up. Building principals who will host the candidates need to believe in the program; the human resources department, which hires the teachers, needs to be kept in the loop, especially if it deals with certification issues; and district staff development teams need to know the weaknesses of the candidates and be prepared to offer assistance or additional professional development (Office of Innovation and Improvement, 2004).

Cleveland (2003) conducted a study that suggested that ARC programs address the shortage by increasing the pool of qualified teachers and attracting knowledgeable and enthusiastic individuals into the field. He believed these alternative routes attract specialists in various fields who would otherwise not have time to obtain a

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traditional teacher degree. Easley (2006) agreed and explored the success rates of teachers who took an alternative route. His research supported the findings that only 15% of ARC graduates intend to leave the profession, whereas the general attrition rate is much higher. Furthermore, ARC graduates are more likely to be grounded in well-formed judgments about the realities of teaching, whereas traditional undergraduate certification candidates find the profession to be more overwhelming and stressful than anticipated (Easley, 2006).

Scribner and Heinen (2009) believed that ARC programs vary in quality, the same as traditional programs, and can therefore not be generalized as being better or worse than the latter. These researchers evaluated the pros and cons of alternative programs, gaining a better understanding of how they differ in form, function, and quality of preparation. Harris, Camp, and Adkison (2003) examined the effectiveness of three routes to teaching used in Texas: alternative certification programs (ACPs), similar to lateral entry programs in North Carolina; Centers for Professional Development and Technology; and traditional certification programs. They found that the traditional certification programs resulted in greater retention and that ACPs resulted in attrition at higher rates than the other types of preparation.

Results of a survey conducted by Justice, Greiner, and Anderson (2003) suggest that teachers who feel inadequately prepared to teach at the time of receiving their first teaching assignment are much less likely to choose the same route into teaching again. These data reveal that 40% of teachers say they would choose the emergency teaching program (alternative certification) again, as compared to 88% of traditionally trained teachers, who feel well prepared to teach. It has been said that alternative programs do not allot enough time for a teacher to develop self-efficacy before entering the classroom, which in turn affects student achievement and scores when they begin teaching. Low student achievement is a contributing factor in early career attrition rates, which some researchers have found stem from low self-efficacy in ARC graduates (Elliott, Isaacs, & Chugani, 2010).

Nagy and Wang (2007) completed a study on all aspects of ARC programs. Some of their research suggested that substantial numbers of ARC teachers lack an understanding of pedagogy, instructional strategies, classroom management, and students' social and academic developmental issues. Oddly, the results of their study displayed that a mere 13% of ARC teachers intend to leave the teaching field that year. Darling-Hammond (2003) stated that the more training prospective teachers receive, the more likely they are to stay. She provided data showing that both 4-year and 5-year teacher education graduates enter and stay at higher rates than do teachers hired through alternative programs that give them only a few weeks of training. Another study favoring traditional methods found that more than one-fifth of classroom teachers leave their positions within the first 3 years of teaching; in urban schools, up to one-half of all new teachers leave teaching within the first 5 years. Moreover, 35% of emergency credentialed teachers leave within the first year of teaching, and more than 60% never receive a credential at

all; however, 70% of prepared teachers remain after 5 years of teaching (Burstein, Czech, Kretschmer, Lombardi, & Smith, 2009).

In a national sample of teachers in 2008, it was found that although the attrition of ARC teachers is higher than that of teachers from traditional pathways, the differences are relatively small, with 82.3% of alternative route teachers and 85.6% of teachers from university-based programs remaining in their schools over a 1-year period (Grossman & Loeb, 2010). In this same study, it was noted that attrition rates vary from program to program.

Certain areas of study have demonstrated a much higher attrition rate than others. Special education, math, and science teachers are currently in greatest demand because of the skyrocketing turnover rate. LaTurner (2002) investigated these issues by examining the relationship between teacher preparation, or path to teaching, and commitment to teach math and science. His research showed a high level of short-term commitment to teach but a relatively lower level of long-term commitment from those who are alternatively certified. Connelly and Graham (2009) investigated the effects of student teaching in teacher preparation programs on teacher attrition rate. Because much research has suggested that a great deal of preservice student teaching is critical for adequate preparation, particularly in special education, these researchers insisted that the lack of student teaching in ARCs contributes to the high rate of attrition. Robertson and Singleton (2010) completed a study where a quantitative design was implemented to determine how the retention rates of individuals who were alternatively prepared to teach special education compare with the attrition rates of those individuals who completed the traditional education program. It was found that although graduates reported similar experiences in the two programs, the alternatively certified remained teaching special education longer than the traditionally trained.

Also said to contribute to the high attrition rate in these three subject areas may be heavy concentration upon one subject in ARC programs, inadequately preparing pupils for the teaching world in its entirety (Stanley & Martin, 2009). Of course, this does not always render true. The alternative Early Childhood Studies/Education Program with a degree of science has found a higher retention rate than other educator programs as well as higher motivation because it includes more classroom experience and emphasis on understanding developing children and children with special needs (Xu, Gelfer, & Filler, 2003). Xu et al. believed that the realities of a multiracial, multiethnic, and multiability student population demand a unique and nontraditional approach characterized by an individualization sensitive to group identity. This particular program is all-inclusive, with an emphasis on student diversity, to which researchers attribute its high success rate. Another successful program is TIME 2000, which trains up-and-coming math teachers in Queens, New York. Out of 68 graduates of TIME 2000 since 2002 who began teaching as soon as they graduated, only 3 have left the field. Much credit is given to mentorship and subject focus (Artzt & Curcio, 2008).

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Research has varied in terms of support of traditional or alternative certification methods. Despite the increase in popularity of ARCs, an immense amount of research supports the traditional teaching degree. Sander (2007) said that states' opposition to ARC programs has been due to a desire to maintain high standards in teacher preparation and, to some extent, a denial that a teacher shortage exists on a large scale. Opponents have pointed out that other professions do not question the need for internships, stringent college preparation programs, and high standards in preparing an individual for work in the field. Sander saw it to be much more cost-effective to create teacher licensure and certification programs that head off attrition issues before they begin, although he found that insufficient data were available on long-term retention rates of alternative programs. While one study may show that traditionally trained teachers have higher retention rates than ARC teachers, another will find the general lack of commitment to teaching as a long-term career in those alternatively trained teachers (Suell & Piotrowski, 2007). Despite the research on comparison of the two methods of certification, there is no concrete decision as to which one produces better, especially long-term, results.

Of special interest to our study is the report of the Education Commission of the States (Allen, 2003), in which the following question is addressed: "Are there 'alternative route' programs that graduate high percentages of effective new teachers with average or higher-than-average rates of teacher retention?" (p. 6). The report concluded that retention rates for alternative routes can be comparable to those of traditionally prepared teachers over the short term, but with regard to long-term retention, "the research on this issue has to be regarded as inconclusive" (p. 7).

Methods

During the spring semester of the academic year 2003–2004, 20 doctoral students in educational leadership were enrolled in an educational research course at East Carolina University. As part of the requirements for the course, students, under the guidance of the instructor, were to replicate Johnson and Birkeland's (2003) study of teacher retention in Massachusetts between 1999 and 2002. It was hypothesized that circumstances, especially with regard to teacher preparation, were significantly different in rural eastern North Carolina when compared with the urban Massachusetts setting for the Johnson and Birkeland study. Each of the 20 doctoral students in the class were required to interview three initially licensed new teachers in eastern North Carolina, each of whom represented the three different possible types of preparation: regular teacher education program, lateral entry (a sink-or-swim alternative licensure program), and NC Teach (a statewide alternative teacher licensure program that focuses on recruiting, preparing, and retaining high-quality, mid-career professionals who want to enter teaching through an alternative licensure route). The teacher-interviewees were identified and contacted individually by the doctoral student interviewers.

Among the 60 interviewees, 41 were first-year teachers, and the remaining 19 were second-year teachers. The interviewees represented a mix of urban, rural, and suburban school settings in eastern North Carolina. Demographic and other relevant data (level taught, discipline taught, parents' occupation) were collected. The 22-question interview protocol, shown in the appendix, was adapted from that used by Johnson and Birkeland (2003). Each of the interviews was audio-taped and then transcribed and imported into NVivo 2 for qualitative data analysis. NVivo is a highly advanced program for supporting qualitative data analysis. This software permits the manipulation of interview data and allows researchers to visually code and link interviews and assign attributes to each interview once data are imported. The most powerful feature of NVivo is its "query," or search, function, allowing researchers to search by text, code, attribute, and combinations of variables (see Bazely & Richards, 2000; Richards, 1999, 2005).

Of the 60 interviewees, 22 were regularly prepared teachers, 20 were lateral entry teachers, and the remaining 18 were NC Teach teachers. Three follow-ups were carried out within the next 7 years, with the goal of finding out whether each of these 60 teachers was still in the teaching profession. In spring 2005, the 60 teacher-interviewees were contacted regarding their status (were they still teaching, or had they left the profession?). In spring 2006, the teacher-interviewees were contacted again regarding their status. In 2005, the number of teachers who were still teaching was 19 for regularly prepared teachers, 12 for lateral entry, and 17 for NC Teach. In 2006, the numbers of teachers who were still teaching in each category were 19, 9, and 16, respectively. In 2011, the numbers of teachers retained in the teaching profession were 19, 7, and 12, respectively.

Nine variables were studied qualitatively and quantitatively to determine their effects on teacher retention: age, career plans expressed during the first year of teaching, having children, ethnicity, gender, level (elementary, middle school, or high school), marital status, parents' occupation, and type of preparation.

Qualitative Data Analyses and Results

The focus of the qualitative analysis in this study was to determine if any of the variables had an impact on teacher retention. In spring and summer 2006 (Year 3 of the study), the "query" function of NVivo 7 was used to generate matrices (similar to cross-tabulations) for each the following targeted variables and the outcome variable retention: age, having children, ethnicity, gender, school level (elementary, middle school, or high school), marital status, and parents' occupation (education vs. noneducation).

We then engaged in a rigorous analysis of the transcript data. We first independently coded the transcript data and found a high intercoder reliability (Cohen's $\kappa = .89$) between the two coders' work. We then sought information about respondents' levels of teaching readiness and looked for patterns in their characteristics

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and responses related to their retention status. Finally, in refining our findings, we relied on an iterative testing process, moving back and forth from the factors that we had identified to the details of the interview data and the retention status.

First, no clear age pattern was discovered for those who left teaching. Teachers who left teaching were young, middle-aged, or older, which indicates that teacher retention did not seem to be impacted by age for this group of participants. Similarly, teachers who left teaching varied in terms of gender, ethnicity, school level, marital status, parents' occupation, and whether they had children. In summary, none of the background variables (age, having children, ethnicity, gender, school level, marital status, or parents' occupation) appeared to have made a difference in retention.

However, among the "leavers," there were proportionally more respondents prepared by lateral entry than by the other two teacher preparation types. We further discovered that more lateral entry teachers reported being less sufficiently prepared to teach in the way that they were expected to teach. They found teaching to be unlike what they had expected and experienced greater challenges overall.

In addition, the same procedure was followed with type of preparation and the outcome variable retention. In this analysis, there appeared to be a difference in retention in relation to type of preparation, with lateral entry lagging behind the other two types of preparation. Finally, with the assistance of NVivo, reports were generated so that interviews of those no longer teaching could be compared with interviews of continuing teachers in terms of the career plans they expressed during the first year of teaching (and other key questions as well). The result of this analysis was the discovery that career plans expressed during the first year of teaching were completely unrelated to subsequent behavior regarding staying in or leaving the teaching profession. Many lateral entry teachers, although initially seeming so positive about careers in teaching, eventually appeared to fall victim to the sink-or-swim environment.

Quantitative Data Analysis and Results

Relationship Between Retention and Teacher Preparation

Because of the findings linking type of preparation to retention, these data were further analyzed using quantitative methods to test whether the association between teacher preparation type and retention is statistically significant. To summarize the data collection procedure, during February and March 2004, 60 initially licensed teachers in eastern North Carolina were interviewed; the same participants were contacted again in spring 2005, in spring 2006, and then again in spring 2011 regarding their teaching status. Table 1 cross-classifies the second-year, third-year, and seventh-year teacher retention data according to type of preparation and retention status. For the lateral entry type in Year 2, for instance, 12 out of 18 teachers

were still teaching and 6 were no longer teaching, whereas for the NC Teach type, 17 out of 18 were still teaching and only 1 was no longer teaching.

On the basis of these data, the retention percentages are calculated and reported numerically in Table 2 and graphically in Figure 1. For such data, it is important to know whether an association exists between teacher preparation type and retention. Is teacher preparation type a factor that impacts teacher retention? Are teachers prepared by one method more likely than those prepared by other methods to remain in the teaching force, or are teachers equally likely to remain in the teaching force regardless of how they are prepared?

A logistic regression model is the appropriate statistical model for binary response variables for which the response measurement for each subject is a “success” (e.g., retention) or “failure” (e.g., dropout; Agresti, 1996). It estimates the effect each explanatory variable has on the categorical outcome variable. In this study, using SAS, a logistic regression model was formulated to test for and estimate the dependency and predictive relationship between the outcome variable retention and explanatory variable teacher preparation type. The explanatory variable teacher

Table 1
Cross-Classification of Retention in Years 2, 3, and 7 by Type of Preparation

Preparation type	Retained in the profession	
	Retained	Left
Year 2		
Regular	19	3
Lateral entry	12	8
NC Teach	17	1
Year 3		
Regular	19	3
Lateral entry	9	11
NC Teach	16	2
Year 7		
Regular	19	3
Lateral entry	7	13
NC Teach	12	6

Table 2
Retention Rate by Teacher Preparation Type

Preparation type (%)	Year			
	1	2	3	7
Regular	100.00	86.36	86.36	86.36
Lateral entry	100.00	60.00	45.00	35.00
NC Teach	100.00	94.44	89.89	66.67

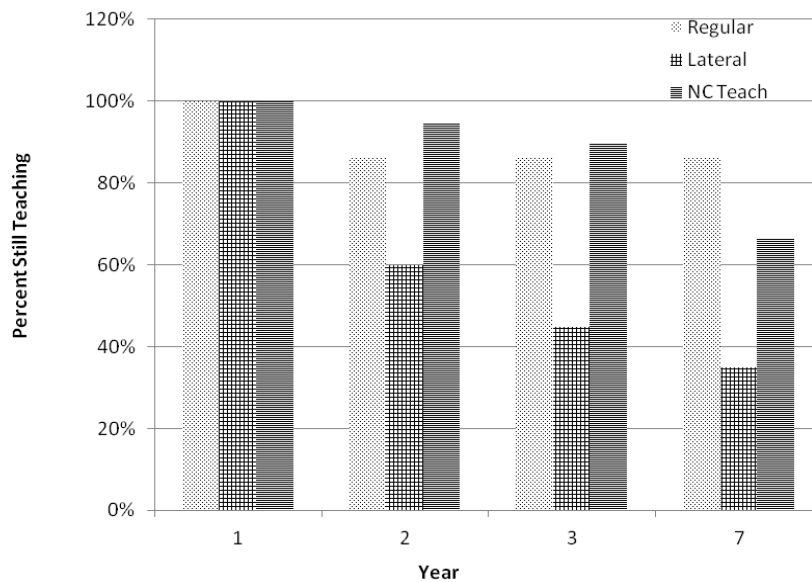
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preparation type is a categorical variable with three categories: regular, lateral entry, and NC Teach. The maximum likelihood estimates of the parameters and the Wald chi-squared statistics on the predictors' effects are obtained.

The results indicate that the retention likelihood for lateral entry teachers is significantly lower than the retention likelihood for NC Teach teachers in Years 2, 3, and 7 (maximum likelihood estimates = -1.289, Wald $\chi^2 = 6.56$, $p = .01$ for Year 2; maximum likelihood estimates = -1.442, Wald $\chi^2 = 10.656$, $p = .001$ for Year 3; maximum likelihood estimates = -1.259, Wald $\chi^2 = 9.415$, $p = .002$ for Year 7). The results further suggest that there is no statistically significant difference between retention likelihood for regular and NC Teach teachers in Years 2 and 3 (maximum likelihood estimates = 0.151, Wald $\chi^2 = .073$, $p = .787$ for Year 2; maximum likelihood estimates = 0.604, Wald $\chi^2 = 1.424$, $p = .23$ for Year 3), but for Year 7, the retention likelihood was higher for regular than for NC Teach teachers (maximum likelihood estimates = 1.205, Wald $\chi^2 = 6.498$, $p = .01$).

To summarize, lateral entry teachers' retention likelihood is lower than that of regular and NC Teach types over both the short and long term (in Years 2, 3, and 7). During the first 3 years, regular and NC Teach teachers have similar retention rates; however, in the long term (at Year 7), regular teachers' retention likelihood is higher than that of the NC Teach teachers.

Figure 1
Retention Rate by Teacher Preparation Type



Retention Probability Based on Preparation Type

To facilitate better understanding, the predicted probabilities of retention are calculated using the estimated parameter values from the logistic regression analysis. The predicted probability of Year 2 retention for regular teachers is 86.3%. By comparison, lateral entry teachers' predicted second-year retention probability is 59.8%, and the NC Teach teachers' predicted second-year retention probability is 84.4%. The results indicate that NC Teach teachers are roughly 25% more likely to be teaching in Year 2 than lateral entry teachers, and regular teachers are roughly 27% more likely to be teaching in Year 2 than lateral entry teachers (see Table 3).

The predicted probabilities of Year 3 retention are 86.3% for regular teachers, 45% for lateral entry teachers, and 77.6% for NC Teach teachers. Consequently, by Year 3, lateral entry teachers' retention probability is roughly 41% lower than that of regular teachers and roughly 33% lower than that of NC Teach teachers.

By Year 7, the predicted retention probabilities are 86.3% for regular teachers, 35% for lateral entry teachers, and 65.5% for NC Teach teachers. Therefore, at Year 7, lateral entry teachers' retention probability is roughly 51% lower than that of regular teachers and roughly 31% lower than that of NC Teach teachers. The predicted retention probability results for all three years are shown graphically in Figure 2.

The predictive efficacies of the models are examined by looking at the coefficient of determination, the generalized R^2 . The generalized R^2 represents the amount of variance in retention explained by type of teacher preparation, that is, how much teacher preparation impacts retention. The Nagelkerke adjusted R^2 (labeled max-rescaled R^2 in SAS; Nagelkerke, 1991) was used, which overcomes a disadvantage of the generalized R^2 ; that is, the generalized R^2 cannot attain a value of 1. The Nagelkerke adjusted R^2 for the Year 2 logistic model is 19.46%, indicating that teacher preparation type accounted for 19.46% of the variance in Year 2 retention likelihood. Moreover, the Nagelkerke adjusted R^2 for the Year 3 logistic model is 26.37%, suggesting that type of teacher preparation accounted for 26.37% of the variance in Year 3 retention likelihood. Similarly, at Year 7, teacher preparation type accounted for 25.75% of retention likelihood.

Overall, the results suggest that about one-fourth of teacher retention likelihood is explained by teacher preparation. It is evident that teacher preparation has a

Table 3
Predicted Retention Probability by Teacher Preparation Type

Preparation type (%)	Year		
	2	3	7
Regular	86.3	86.3	86.3
Lateral entry	59.8	45	35
NC Teach	84.4	77.6	65.5

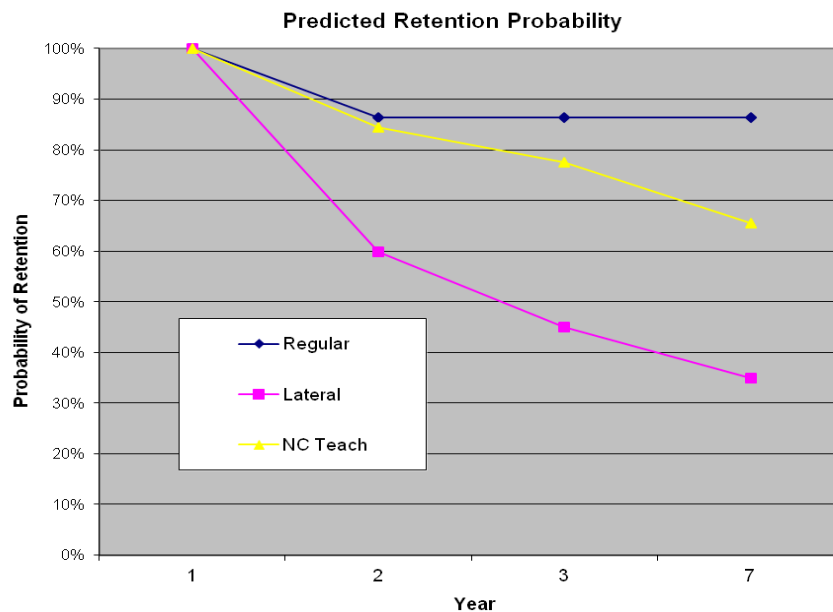
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significant impact on retention; that is, teacher retention likelihood partially depends on the type of preparation teachers receive. Although type of teacher preparation is an important factor that explains teacher retention, predicting retention is more complex and will require further consideration and examination of other factors.

In summary, the results reveal that the retention likelihood for lateral entry teachers is significantly lower than the retention likelihood for NC Teach teachers and regular teachers in Years 2, 3, and 7. Although there is no statistically significant difference between the retention likelihoods for regular and NC Teach teachers in Years 2 and 3, at Year 7, regular teachers' retention likelihood is higher than that of NC Teach teachers. Specifically, in Year 2, NC Teach teachers are roughly 25% more likely to be teaching than lateral entry teachers, and regular teachers are roughly 27% more likely to be teaching than lateral entry teachers. In Year 3, the predicted retention probability for regular teachers is 86.3%, for lateral entry teachers is 45%, and for NC Teach teachers is 77.6%. It is clear, then, that at Year 3, lateral entry teachers' retention probability is roughly 41% lower than that of regular teachers and roughly 33% lower than that of NC Teach teachers. At Year 7, lateral entry teachers' retention probability is roughly 51% lower than that of regular teachers and roughly 31% lower than that of NC Teach teachers.

It is worth mentioning that of all the variables more broadly investigated in the

Figure 2
Predicted Retention Probability by Type of Teacher Preparation



study (age, career plans expressed during the first year of teaching, having children, ethnicity, gender, school level [elementary, middle school, or high school], marital status, parents' occupation, and type of preparation), only type of preparation appears to have obvious predictive validity for retention in the teaching profession.

Discussion

The report of the Education Commission of the States (Allen, 2003) is of special interest, especially with regard to the question, "Are there 'alternative route' programs that graduate high percentages of effective new teachers with average or higher-than-average rates of teacher retention?" Short-term retention rates for alternative routes, according to the report, can be comparable to those of traditionally prepared teachers, but with regard to long-term retention, "the research on this issue has to be regarded as inconclusive." The current study shows that long-term retention gets worse for alternative route teachers. However, this study spans only 7 years; longer term retention, such as retention over 8–20 years or even longer, is still an issue to be addressed by future studies. Additionally, this study only included 60 teachers. A larger, randomly selected sample in a future study could add to the certainty of the findings and improve the size of the population to which the findings can be generalized.

One explanation for the lower retention rate of lateral entry teachers can be found in the research of Evans (2011), who claims that lateral entry teachers are "more likely to work in disadvantaged schools with high populations of poor and non-White students, whereas, fully certified teachers are more likely to work in more affluent, advantaged schools" (p. 271). The result is that the schools "with the greatest needs are staffed by those with the weakest training, leading . . . to the reproduction of social and education inequality" (p. 271). Future studies are needed to examine the types of schools and the school environments in which the teachers teach to assess the effect of disadvantaged schools on the retention of lateral entry teachers. Certain aspects of school environments, such as student behavior or insufficient school support, are often cited as reasons that teachers change schools or leave teaching and can certainly play a role in the career decisions of lateral entry teachers. If a strong effect is found, then one might conclude that preparation type is only partially responsible for the high attrition among lateral entry teachers.

Another explanation may reside in the teachers themselves. Students in teacher education programs seek jobs that remind them of their clinical experiences and how they were socialized into prioritizing learning and focusing on pedagogy. They seek out employers, regardless of student populations, with the same cultures and organizational structures of their universities. In contrast, the lateral entry students have no experiential base on which to draw when it comes time to seek a job in a school. They do not have the experience to expect good mentoring or leadership.

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The first priority is a paycheck. Is it any wonder that there is a retention difference between the two types of teachers?

However, the primary reason that lateral entry teachers are retained at a lower rate than regularly prepared and NC Teach teachers may be that they simply are not as well prepared for the classroom as the other two types of teachers. In comparison, the regularly prepared teachers have spent 4 years studying both their content area and professional pedagogy and have at least one semester of full-time student teaching. The NC Teach teachers have spent a summer in full time, plus the two following semesters part time, studying courses in pedagogy. The lateral entry teachers have no preparation in pedagogy at all when they begin; only after starting teaching do they begin to take pedagogical classes part time.

Our study partially confirms the findings of Harris, Camp, and Adkison (2003) that the traditional certification program results in greater retention than ACPs (i.e., lateral entry). The significance of the results of the current study is apparent: Policy makers who invest resources in special alternative licensure programs invest wisely, as the specially supported teachers appear to persist in their teaching careers at roughly the same rate as regularly prepared teachers, at least during the first 3 years. At the same time, it seems obvious that the lateral entry alternative licensure path presents many obstacles for the novice teacher to overcome. Consequently, it would make sense for policy makers and education leaders from universities and communities to strengthen existing alternative licensure programs as well as to continue to improve special alternative licensure programs such as NC Teach.

However, teacher retention and attrition are not solely dependent on method of preparation: Access to teaching resources; personal background; competency knowledge; and perceived support from school districts, teacher preparation programs, and pupils' parents must also be considered (Lee, Patterson, & Vega, 2011). For example, Freedman and Appleman (2009) concentrated their research on preparation of teachers specifically serving in high-poverty areas and found that regardless of method of education, teachers continue teaching if they can adopt multiple educational roles inside and outside the classroom and receive professional support during the whole of their careers. Whether pathways to credentialing are traditional or alternative, teacher preparation programs must examine a variety of variables associated with effective teacher performance and retention.

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Appendix

Protocol for Interviews Conducted in Spring 2004

1. What school level do you teach (elementary, middle, or high school)?
2. Are you married?
3. Do you have children?
4. What is it like to teach here?
5. Has teaching been what you expected? Why? Why not?
6. What did you expect before you entered?
7. How did you decide to teach?
8. Did your parents influence you?
9. What do/did your parents do?
10. People come to teaching by different pathways. What type of teacher preparation have you had?
11. Are you certified by the state?

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12. How did you come to teach at this school?
13. Can you describe the types of support you've received as a new teacher, within either the school or the district?
14. Is the support that you have received what you needed?
15. Do you feel sufficiently prepared to teach in the way that you're expected to teach here?
16. Do you watch other teachers teach?
17. Do you need to seek information or advice about what and how to teach?
18. Does teaching offer you a "good fit" as a career?
19. How long do you plan to stay in teaching?
20. Will age, gender, or ethnicity influence your plan to stay in teaching?
21. Will family influence your plan to stay in teaching? Will your marital status influence your plan to stay in teaching?
22. Will your parents' occupation influence your plan to stay in teaching?