IMPACT ON STUDENT PERFORMANCE
TEXAS ADULT EDUCATION TEACHER CREDENTIAL STUDY PRELIMINARY RESULTS

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IMPACT ON STUDENT PERFORMANCE: TEXAS ADULT EDUCATION TEACHER CREDENTIAL STUDY PRELIMINARY RESULTS

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ABSTRACT

This research brief offers the results of a study of the impact of the Texas Adult Education Teacher Credential (the Credential) on student performance as measured by the TABE® and BEST Plus™ assessments based on an analysis of three years (2010-2012) of Texas Educating Adults Management System (TEAMS) data. This initial analysis reveals three primary findings: Classes taught by teachers who have earned the Credential have significantly more students meeting required gains, as defined by the Texas State Assessment Policy, for both TABE® and BEST Plus™ assessments; classes taught by teachers who are employed full-time have significantly more students meeting required gains for both TABE® and BEST Plus™ assessments; and Credential status of adult education teachers appears to have a larger impact on student performance than does full-time paid employment status.

KEY IMPLICATIONS

Three key findings of the study will be discussed in this research brief. Results indicate that (a) classes taught by teachers who have earned the Credential have significantly more students meeting required gains for both TABE® and Best Plus™ assessments, (b) classes taught by teachers who are employed full-time have significantly more students meeting required gains for both TABE® and Best Plus™ assessments, and (c) the (moderate) relationship between Credential status and class performance is much larger than the (small) relationship between employment status and class performance. It is important to note that the statistical techniques used for these analyses cannot establish causality but do support the notions that credentialing and the use of full-time paid teachers does improve student outcomes. Additional investigation and analysis will attempt to establish causality.

INTRODUCTION

This research brief shares preliminary findings from an on-going study designed to examine the outcomes associated with earning the Texas Adult Education Teacher Credential; the primary focus is to identify any potential impact on teachers, students, programs and policy. The researchers analyzed three years (2010-2012) of program, teacher, and class data in the Texas Educating Adults Management System (TEAMS) housed at Texas Education Agency (TEA). The primary research question for this preliminary study was: How does being taught by adult education teachers who have earned the Texas Adult Education Teacher Credential affect student performance?

The study was conducted by the Credential staff and by Texas State University Adult Education and Developmental Education faculty and doctoral students. Factor variables of the dataset include: Credential status, employment status, location (GREAT Region), K-12 certification level, fiscal agency type, degree type, and amount of staff teaching each class. This research brief addresses two of those

variables, credential status and teacher employment status. Further analysis of the dataset is underway using multivariate statistical analysis and path analysis to determine the impact of interactions of these, and prior mentioned variables, on each other; those results are forthcoming.

BACKGROUND

Qualifications for Adult Education Teachers

Qualifications for hiring adult basic education and GED teachers are not standardized nationally. When policy standards exist at the state level, there is great variation in the rigor and consistency among states (Smith and Gomez, 2011; D. Stedman, personal communication, August 10, 2010). Most states require a bachelor's degree; some states require K-12 teacher certification, and only a few states offer or require certification in adult education (Bureau of Labor Statistics, 2009; Smith and Gomez, 2011). Texas requires a four-year college degree in any discipline for teaching in a state-funded adult education program accompanied by 12 hours of professional development annually. More professional development hours are required for those who do not hold a K-12 teaching certificate and for teachers new to adult education (Texas State Board Of Education Rule on Adult Education, 2010). Texas has offered an optional adult education Credential since 2004.

A Brief Overview of the Texas Adult Education Teacher Credential

Each year, approximately 3 million adults enroll in adult education programs. These programs benefit adult learners by providing them with valuable labor market skills as well as two of the most basic prerequisites for postsecondary education, high school equivalency and English language literacy. As with K-12 and postsecondary education systems, improvements to adult education programs have focused on establishing standards for program activities and student preparedness for employment and postsecondary education.

High quality, standards-driven programs require teachers who possess the knowledge and skills to facilitate adult learning. Formal training and credentialing establish high standards for adult education teachers and increase the status of adult education programs. To this end, the Texas Adult Education Credential was developed and implemented as a state-wide adult education initiative and is the means by which Texas adult education teachers demonstrate that they possess the knowledge and skills necessary to improve under-prepared adult student readiness for both college and career.

The Credential emphasizes the link between theory in adult education and professional practice. Credentialed teachers move beyond simply understanding adult education theory; they work toward mastering their practice by completing high quality professional development, implementing what they have learned in their classrooms, and engaging in critical self-evaluation in which they analyze both student and instructional outcomes.

The Texas Adult Education Credential was one of the first teacher credentialing systems in the nation and has provided guidance to other states as they begin to develop their own systems for teacher credentialing. Further, Texas has been actively involved at the national level in the work related to both national adult education standards and a national adult education credential and is one of the few states to offer an additional credential for administrators of adult education programs.

Teacher training has long been considered to be a significant element of quality education programs. However, research studies often lack sufficient rigor to demonstrate the effect of teacher training on student achievement (Borko, 2004; Fuller, 2010; Supoviz, 2001). Further, research on instructional strategies for teaching adult learners in adult basic education is virtually non-existent (Chisman, 2011; Hector-Mason et al., 2009). This study begins to address this paucity of research and is intended to lead to more in depth analyses in subsequent studies.

The goal of this study is to determine whether teachers of adult students who earned the Texas Adult Education Teacher Credential (the Credential) show higher performance than non-credentialed teachers, as measured by the percentage of required student gains[1] on the TABE® Language Arts, TABE® Reading, TABE® Math, Best Plus™ Oral, and BEST Literacy™.

The dataset used was requested through a Public Information Request (PIR) submitted to the Texas Education Agency (TEA). The data were mined from the Texas Educating Adults Management System (TEAMS). These data, from years 2010, 2011, and 2012, provide records for every adult education class taught and entered in the accountability system and include general demographic data, employment data, qualifications, and overall class performance data. In the case of this study, the class performance data, which are the percentage of student gains for each of the tests mentioned, serve as a teacher performance measure to determine the outcome of earning the Credential. Although the dataset included several variables[2], for the purpose of this initial study the researchers examined only the effects of the Credential and of employment status on the percentage of students meeting their required gains.

After combining all three years of data, the dataset was filtered to contain only those teachers who had earned the Credential (called "Completed" in Table 1) and those who had never been exposed to the credentialing process (called "None" in Table 1); then, the researchers looked at all of the classes taught by these teachers. Since teachers typically teach multiple classes each term, one teacher might have multiple class records in the dataset. However, these classes are unique; none are duplicated nor do they contain the same group of students. Thus, the teacher performance outcome is solely based on the percentage of students meeting their required gains by class.

The dataset included a total of 18,916 classes over the three-year period. Table 1 describes some of the demographic characteristics of the dataset; however, to understand the difference between teacher performance of those with and without the Credential, the researchers did not include those classes taught by teachers who had been exposed to the Credential process, but not yet earned ("new" and "initiated") the Credential, to prevent as much bias as possible.

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[1] Students are given a baseline assessment prior to instruction, and after instruction, if they score at one more levels above their baseline assessment, they are considered as having reached gains as required by the state through NRS.
[2] Factor variables of the dataset include: credential status, employment status, location (GREAT Region), K-12 certification level, fiscal agency type, degree type, and amount of staff teaching each class.

Table 1

Teacher Credential and Employment Status

Credential Status	Number	Percent
None	17594	93.0
Completed	323	1.7
Initiated	735	3.9
New	264	1.4
Employment Status		
Paid/full time	2257	11.9
Paid/part-time	16562	87.6
Volunteer	97	0.5
Total	18916	100.0

RESULTS

In looking at the impact of the variables, Credential Status and Employment Status appear, at first glance, to have the largest impact on teacher performance. Credential Status, by far, had the most significant impact on the percentage of students demonstrating the required gains. This impact was measured by an independent samples t-test, which compares the means of two groups. Results are displayed in Table 2.

Table 2

Percent Difference in Gain for Credential Teachers

Outcome Measure	Difference in required gain	t	df	p	d
% Student gains in TABE® Reading	9.1	4.230	9278	<.001	0.09
% Student gains in TABE® Language	6.1	2.562	172.6	.01	0.39
% Student gains in TABE® Math	11.0	4.932	8345	<.001	0.11
% Student gains in BEST Plus™ Oral	1.7	1.750	231.990	.08	0.23
% Student gains in BEST Literacy™	6.1	4.541	235.957	<.001	0.59

What this says, by every measure, is that the teachers with the Credential had a higher percentage of students demonstrating the required gains; see Figure 1. For example, the average percentage of students meeting the required gains in TABE® Reading is 9.1% higher in classes containing a teacher with the Credential. Statistically, the difference is significant for all measures except BEST Plus™ Oral.

Impact of Credentialing on
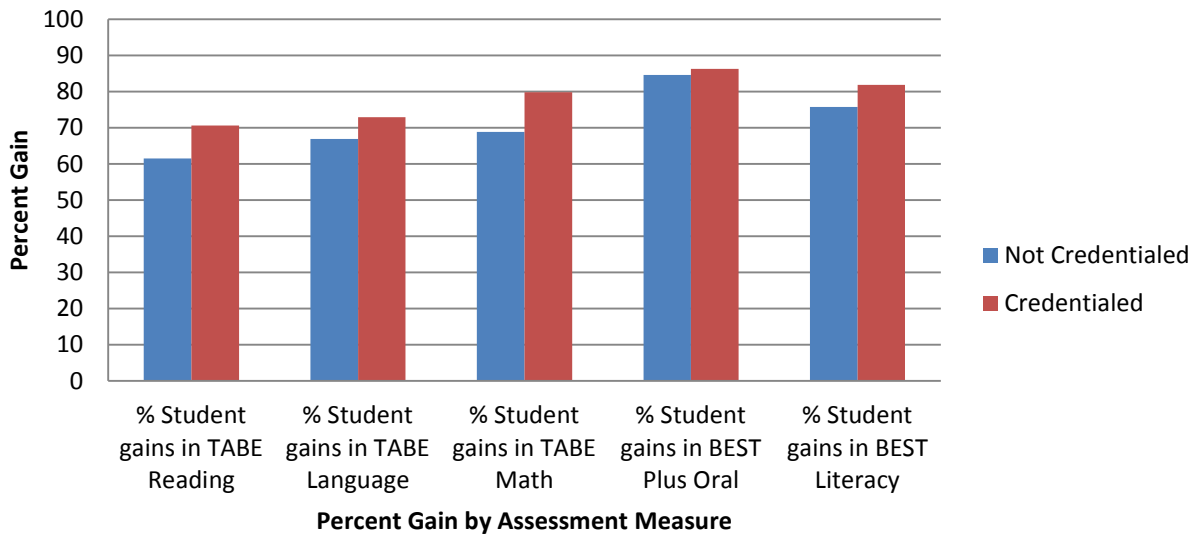## % of Students Meeting Required Gains

Figure 1. Mean difference in required gains. Statistically significant differences were found for all measures except the BEST Plus™ Oral examination.

Likewise, employment status appears to have a strong relationship to these outcome measures. In order to examine the impact of Employment Status on the outcome variables, the team conducted an Analysis of Variance (ANOVA) on the data. ANOVA looks at the variance within each category and the difference in means between the categories (Full-time, Part-time, and Volunteer), basically challenging the hypothesis that there is even a difference within or between groups. A test statistic, F, is calculated and used to determine if there is a statistically significant difference in the means of the categories. With this dataset, we found F to be significant, as measured by $p < .05$, in all but one case; see Table 3.

As shown in Figure 2, full-time teachers showed significantly higher percentages of students demonstrating required gains in all measures except BEST Literacy™. However, the effect size of this variable is very small since in all cases it explains less than 1% of the variation in the outcome variables ($\eta^2 < .01$). This means that, although significant, the difference has little practical use.

Table 3

Differences Based on Teacher Employment Status

		Sum of Squares	df	Mean Square	F	p	η^2
% Student gains in TABE® Reading	Between Groups	22908.170	2	11454.085	15.076	<.001	.003
	Within Groups	7450994.127	9807	759.763			
	Total	7473902.297	9809				
% Student gains in TABE® Language	Between Groups	12205.097	2	6102.548	9.112	<.001	.002
	Within Groups	6323223.230	9442	669.691			
	Total	6335428.327	9444				
% Student gains in TABE® Math	Between Groups	13838.709	2	6919.354	10.019	<.001	.002
	Within Groups	6087328.238	8814	690.643			
	Total	6101166.947	8816				
% Student gains in BEST Plus™ Oral	Between Groups	2094.479	2	1047.240	3.160	.042	.0005
	Within Groups	3972835.296	11987	331.429			
	Total	3974929.775	11989				
% Student gains in BEST Literacy™	Between Groups	1398.370	2	699.185	1.196	.303	.0002
	Within Groups	6743182.143	11530	584.838			
	Total	6744580.513	11532				

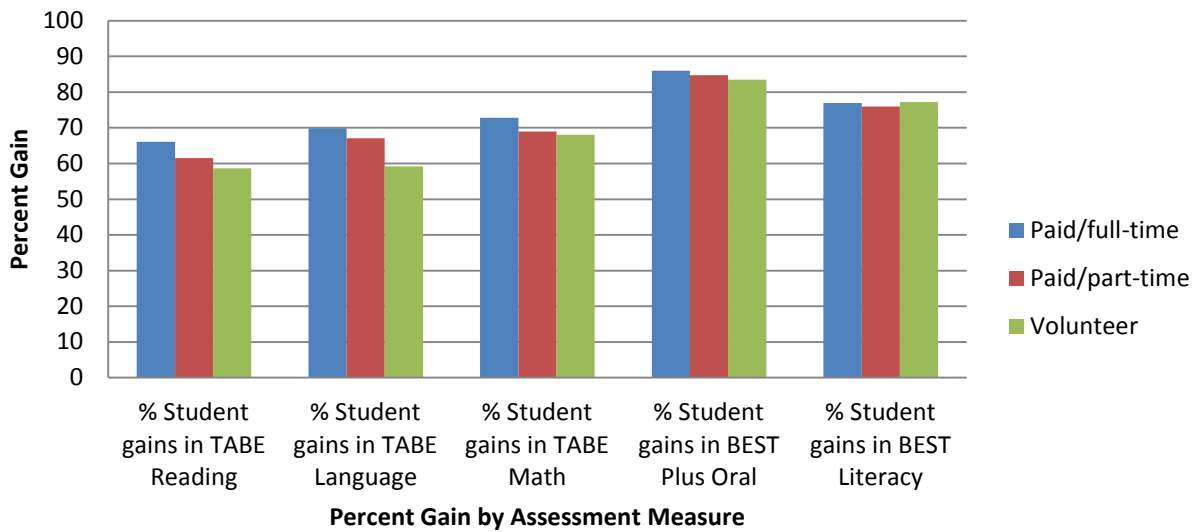**Relation of Employment Status to % of Students Meeting Required Gains**

Figure 2. Variance of student gains between employment statuses. Results suggest that students in classes taught by full-time teachers show significantly higher gains.

Through further investigation using multivariate statistical analysis and path analysis, the interactions between variables will be explored; however, given these initial findings, these researchers note that the most significant predictive variable so far is the Credential status of the teacher.

CONCLUSIONS

Adult education students in classes taught by teachers who are employed full-time perform significantly better than students taught by teachers who are employed part-time as evidenced by gain scores on both the TABE® and BEST Plus™ assessments. Texas maintains a primarily part-time adult education teacher workforce. Only 9.8% of adult education teachers in Texas in 2007-2008 were employed full-time; slightly more than 90% were part-time (Texas Workforce Investment Council, 2010). Most part-time teachers are paid at an hourly rate and earn few or no benefits (Bureau of Labor Statistics, 2009). Fiscal constraints are often cited as the primary barrier to employing a significant number of full-time teaching staff; however, this research suggests that the benefits of moving to a larger portion of full-time teachers as a means of increasing program performance gains may invalidate the tradition of employing a part-time adult education teacher workforce. The recommendation from this finding is to further strengthen and professionalize the field of adult education by encouraging the development of a full-time workforce.

Adult education students in classes taught by teachers who have earned the Texas Adult Education Teacher Credential (the Credential) perform significantly better than students in classes taught by non-Credentialed teachers as evidenced by gain scores on both the TABE® and BEST Plus™ assessments. This finding may be explained by several factors that are supported both in the TEAMS data and the literature (Metiri, 2010; Scholastic, 2007; Smith and Hofer, 2002; Yoon et al., 2007). The process of earning the Credential engages teachers in learning, implementing, and evaluating new knowledge and skills with more intensity than simply attending the required hours of professional development. Therefore, the recommendation from this finding is that teachers should be encouraged to tailor the professional development they choose to attend to meet the needs of their students and, through the Credential process, learn the valuable and replicable skills of implementing, evaluating, and reflecting as a critical part of their ongoing professional development.

This study is on-going; an analysis of the dataset is underway using multivariate statistical analysis and path analysis to determine the impact of interactions of these, and prior mentioned variables, on each other; those results are forthcoming.

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