

Research Brief:

Master's Degrees and Teacher Effectiveness: New Evidence From State Assessments

September 2011

FREQUENTLY ASKED QUESTIONS

What is the Walden University Richard W. Riley College of Education and Leadership, and why was it chosen to be in this study?

Walden University's Richard W. Riley College of Education and Leadership is the largest online graduate program in education by enrollment according to *U.S. News & World Report* (May 2010). Named for the former Secretary of the U.S. Department of Education, the college is dedicated to enhancing educator effectiveness and seeks to foster a dynamic and diverse network of education leaders who are committed to the pursuit of positive social change through education. Details about Walden can be found online at www.WaldenU.edu/education. Walden University commissioned this study.

How do I interpret the effect size comparisons?

One way to understand the practical significance of these effects is to compare the effect sizes found for master's degrees to the average difference between current year and prior year student test scores. This is helpful because the effect sizes for the master's degree analyses and the difference between average prior year scores and current year scores both describe group differences achieved within one year using the same testing data. From school years 2004 through 2009, the average growth in standardized scale scores on the CRCT assessment for students in the sample was .046 for reading and .059 for language arts. That is, without controlling for any other factors, students in the sample performed an average of .046 standard deviations higher in the current school year than in the prior school year in reading and .059 standard deviations higher for language arts. This includes students whose teacher had obtained a master's degree and students whose teachers had not obtained a master's degree. By comparison, a .02 standardized mean difference for students whose teachers held a master's degree is equal to 43% of the average year-to-year growth in reading performance for students in the sample; for language arts, a .02 standardized mean difference is equal to 34% of the average year-to-year growth in language arts performance for students in the sample.

How do you read the tables at the end of the brief?

Tables 1 through 4 at the end of the brief present regression coefficients for the final model used in the analysis. Each number is the regression coefficient (described above) for the variable listed. The outcome variable is listed in the table title. The variables listed are predictors of that outcome. The coefficients show the change in the outcome associated with a one-unit change in the predictor variable, holding all other predictors constant. So, for example, in Table 2, the outcome is the reading CRCT scale score, and having a teacher with a master's degree is associated with a .02 standard deviation change in the CRCT reading scale score, assuming all other variables are held constant. The asterisks indicate the level of statistical significance.

What is the specific sample size used for the research?

Teacher Universe	Teachers ¹	Student Records ²
All	3,924	205,226
Non-master's	3,113	183,037
Master's degree	811	22,189
Walden M.S.Ed. with a specialization in Elementary Reading and Literacy (Grades PreK-6)	139	4,383

What are the student demographics for the sample?

Grade Level					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Grade 2	69,651	26.7	26.7	26.7
	Grade 3	68,376	26.2	26.2	52.8
	Grade 4	62,941	24.1	24.1	76.9
	Grade 5	60,384	23.1	23.1	100.0
	Total	261,352	100.0	100.0	

¹Note: These are the analytic sample figures that include only teachers with complete data, drawn from a base of 4,106 teachers of record in reading.

²Note: These are the analytic sample figures that include only students for whom there were no missing values in the variables used in the analysis.

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	130,549	50.0	50.0	50.0
	Male	130,797	50.0	50.0	100.0
	Total	261,346	100.0	100.0	
Missing	System	6	0.0		
Total		261,352	100.0		

ELL Status					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not ELL	220,484	84.4	84.4	84.4
	ELL	40,864	15.6	15.6	100.0
	Total	261,348	100.0	100.0	
Missing	System	4	0.0		
Total		261,352	100.0		

Race/Ethnicity					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	African American	64,070	24.5	24.5	24.5
	Asian	26,702	10.2	10.2	34.7
	Hispanic	62,251	23.8	23.8	58.6
	Native American	1,041	.4	.4	59.0
	White	97,688	37.4	37.4	96.3
	Multiple	9,594	3.7	3.7	100.0
	Total	261,346	100.0	100.0	
	Missing	System	6	0.0	
Total		261,352	100.0		

ESL Placement Indicator					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not ESL	234,950	89.9	89.9	89.9
	ESL	26,398	10.1	10.1	100.0
	Total	261,348	100.0	100.0	
Missing	System	4	0.0		
Total		261,352	100.0		

Free and Reduced-Price Lunch					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not participating	146,821	56.2	56.2	56.2
	Reduced lunch	22,673	8.7	8.7	64.9
	Free lunch	91,854	35.1	35.1	100.0
	Total	261,348	100.0	100.0	
Missing	System	4	0.0		
Total		261,352	100.0		

How were the variables used in the study identified and selected?

Initial variable selection was completed using stepwise regression, an empirical variable selection process that tests the contribution of each variable to explaining the outcome variable(s) of interest. That is, we sought the best model fit given the data available to us. Not every variable sought for the analysis was available to the research team. These include, for example, teacher undergraduate degree institution and program and specific master's degree and program information for non-Walden universities, neither of which was available to the researchers. The final variables are shown in the table at the end of this analysis. Not all are used in each analysis.

Data for the study was drawn from four sources:

- District-provided student, teacher, and related records
- Walden University student records
- Georgia Department of Education technical records regarding the CRCT
- Market Data Retrieval for third-party information regarding teacher degree attainment

Why was the particular Georgia school system selected for this study?

The school system is known for its strong and innovative management and commitment to using data to inform its education decisions. Walden University and Arroyo Research Services sought to replicate the findings and research approach from the 2009 study in Tacoma Public Schools (Washington) and sought a partner that had good data, would make use of any analysis produced by the study, and had a sufficient concentration of Walden graduates to assure a reasonable chance to identify a cohort suitable for the study. The district fit each of these criteria.

What is the Georgia Criterion-Referenced Competency Test (CRCT)?

The Georgia Criterion-Referenced Competency Tests (CRCT) are the statewide standardized tests administered by the Georgia Department of Education. They are designed to measure how well students acquire the skills and knowledge described in the Georgia Performance Standards (GPS) and include data about student performance in mathematics, reading, and English language arts for grade levels included in the study. The assessments are designed to provide information about academic achievement appropriate for use at the student, class, school, system, and state levels and to guide decision making regarding individual student performance, school and district level academic programs, and statewide reform efforts. Additional information about the tests can be found here: <http://www.gadoe.org/Curriculum-Instruction-and-Assessment/Assessment/Pages/CRCT.aspx>.

Why was the Georgia Criterion-Referenced Competency Test (CRCT) selected?

The CRCT was the only test available in the participating district that covered grades 2 through 5 for the study period and that could provide consistent outcome data for the subject areas of interest to the research team: reading and language arts.

Is it possible that using a different assessment might have yielded different results? If not, why? If so, why?

Of course. No two assessments are identical to one another, and each is designed for a particular purpose and to assess a specific set of knowledge and skills. This is among the reasons why one study alone is not usually sufficient to settle a research question. In a recent study conducted by Arroyo Research Services and pending publication, the research team had access to three separate assessments of reading performance for a group of students. Each assessment was correlated to the others, each showed positive growth for the intervention being studied, but only one showed statistically significant differences for the intervention. Reasons for this could include: the intervention may have been more focused on the constructs in that particular test than the others, the tests may have differed in sensitivity or ability to detect small changes in student proficiency, or the tests may have been administered at different times relative to the intervention. In this study, the only assessment available over multiple years and multiple grades was the state administered standardized assessment.

What is the relationship between Arroyo Research Services and Walden's Riley College of Education and Leadership?

Arroyo Research Services is an independent education research, measurement, and evaluation firm based in North Carolina. Our work includes grant program evaluation, random control trials, and education research consulting in the areas of teacher effectiveness, professional development, education technology, STEM, reading, migrant education, interpreter education, and teacher preparation. Current and recent clients include the state education agencies of Ohio, Texas, Maryland, Virginia, New York, Kentucky, Maine, Hawaii, and Washington; work with major school districts, including Fairfax County (Virginia), Montgomery County (Maryland), Columbus and Dayton (Ohio), and Garden Grove (California); and universities that include Walden University, UC Irvine, California Polytechnic State University-San Luis Obispo, Auburn University, Northeastern University, University of Virginia, and the University of North Texas; as well as work with other education firms. Walden University commissioned the work reported in this research brief.

Variables used throughout the study and information about how they were calculated are included below.

Variable	Full Name	Comments
Master's Degree	Master's Degree	1/0 indicator of whether this student's teacher had a master's degree at the time of testing
Walden ERL	Walden ERL	1/0 indicator of whether this student's teacher had a Walden M.S.Ed. with a specialization in Elementary Reading and Literacy (Grades PreK–6)
RD	Reading Score	Z-score standardized scale score for the current year CRCT in reading. Z-scores were calculated using state means and standard deviations by year, grade level, and subject.
LA	Language Arts Score	Z-score standardized scale score for the current year CRCT in language arts. Z-scores were calculated using state means and standard deviations by year, grade level, and subject.
RD Pre	Reading Score, Prior Year	Z-score standardized scale score for the prior year CRCT in reading. Z-scores were calculated using state means and standard deviations by year, grade level, and subject.
LA Pre	Language Arts Score, Prior Year	Z-score standardized scale score for the prior year CRCT in language arts. Z-scores were calculated using state means and standard deviations by year, grade level, and subject.
SY 2004	School Year 2004 (2004–2005)	1/0 indicator of whether this record was from the indicated school year
SY 2005	School Year 2005 (2005–2006)	1/0 indicator of whether this record was from the indicated school year
SY 2006	School Year 2006 (2006–2007)	1/0 indicator of whether this record was from the indicated school year
SY 2007	School Year 2007 (2007–2008)	1/0 indicator of whether this record was from the indicated school year
SY 2008	School Year 2008 (2008–2009)	1/0 indicator of whether this record was from the indicated school year
SY 2009	School Year 2009 (2009–2010)	1/0 indicator of whether this record was from the indicated school year
Grade 2		1/0 indicator of whether student was in this grade for the current year
Grade 3		1/0 indicator of whether student was in this grade for the current year
Grade 4		1/0 indicator of whether student was in this grade for the current year
Days Enrolled	Total Days Enrolled	Number of days enrolled for the school year of this record. Calculated from enrollment/withdrawal records as the number of calendar days enrolled. Does not account for absences.

Variable	Full Name	Comments
African American	Ethnicity:African American	1/0 indicator of whether student is African American
Hispanic	Ethnicity: Hispanic	1/0 indicator of whether student is Hispanic
ELL	English Language Learner	1/0 indicator of whether student is coded as ELL for the current school year
Free or Reduced-Price Lunch	Free or Reduced-Price Lunch	1/0 indicator of whether student qualifies for either free or reduced-price lunch
Special Ed (Class Pct)	Special Education Class Percent	Percent of students with an IEP in the reading class in which this student was enrolled for the current school year
RD Pre (Class)	Reading Pre Score, Class Mean	Mean reading CRCT scale score pre-score of students in the analysis in this student's reading class. Calculated as the mean of RD Pre (above) for the student's class for the current year.
LA Pre (Class)	Language Arts Pre Score, Class Mean	Mean language arts CRCT scale score pre-score of students in the analysis in this student's reading class. Calculated as the mean of LA Pre (above) for the student's class for the current year.
Teacher Experience	Teacher Experience	([x]SA_t_total_exprnc_yrs) = Teacher's teaching experience in years
RD Pre (School)	Reading Pre Score, School	Mean reading CRCT scale score pre-score of students in the analysis in this student's school. Calculated as the mean of RD Pre (above) for the student's school for the current year.
LA Pre (School)	Language Arts Pre Score, School	Mean language arts CRCT scale score pre-score of students in the analysis in this student's school. Calculated as the mean of RD Pre (above) for the student's school for the current year.
Title I	Title I Indicator	1/0 indicator of whether the current school was designated a Title I school or not
LOC_ID	Location ID	Unique identifier for each school
yearsless5	Less Than Five Years' Experience	1/0 indicator of whether teacher had less than five years of teaching experience
years20plus	More Than 20 Years' Experience	1/0 indicator of whether teacher had more than 20 years of teaching experience
FRPL_CLASS	Free and Reduced-Price Lunch, Class	% of students in this student's reading class that qualify for free or reduced-price lunch
STAFF_ID	Staff ID	Unique identifier for each teacher