Evaluation Matters

Volume 3, Number 6 November 2013 Steven M. Urdegar, Ph.D., Director

Teach for America:
An Analysis of Placement and Impact, 2012-13

1. What is the purpose of this report?

This report examines the placement of Teach for America (TFA) teachers and examines their impact on the learning gains of their students during 2012-13. TFA is an organization that recruits and trains recent college graduates/professionals to teach for two years in selected communities. Admission is competitive. All members attend five-weeks of intensive preparatory training and receive ongoing support from the TFA Foundation during their internship. Teachers who do not hold certification in their assigned content areas receive alternative certification through coursework taken while completing the program. TFA teachers receive the regular district salary and benefits, supplemented by a voucher that can be used to cover previous student loans, credentialing, or further education.

2. Which populations were targeted in this report?

Sets of eligible TFA teachers were identified in 2012-13 including all TFA teachers assigned to teach language arts and/or mathematics to students in grades 3 through 10. The comparison pool included all Non-TFA teachers assigned to teach students in grades 3 through 10 in schools with TFA teachers, who did not previously participate in the TFA program. For each TFA teacher, a teacher was drawn from the comparison pool matched on grade, subject area, number of students, and the proportion of the teacher's course assignments in each of six predefined categories using Multivariate and Propensity Score Matching Software with Automated Balance Optimization (Mebane & Sekhon, 2011; Sekhon, 2011) in R version 3.0.0 (R Development Core Team, 2013). A description of the categories and of the matching process may be found in Appendix A.

3. How were the data for this report collected and analyzed?

Data used in this analysis were obtained from archival records supplemented by data from the student data-base system and weighted student learning gains computed by the Florida Department of Education (FLDOE) and described in Florida Department of Education (2012, p.11). Analysis of the amount of time TFA teachers continued teaching in the District, once their committment to TFA program ended, was limited to descriptive statistics. Designation of the proportion of TFA teachers' course assignments in each category were determined by multiplying the proportion of their students enrolled in each course sequence by the number of periods in the school day. Patterns of course assignments by category were then examined using descriptive statistics. The analysis of the impact of TFA teachers was conducted by comparing the proportion of TFA and Non-TFA teachers' students who made learning gains in core courses. and gauging the statistical significance of any differences in the

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comparisons using chi-squared (χ^2) tests. Phi (ϕ) coefficients were used to classify the practical significance of any significant comparisons found as .10 (weak), .30 (moderate), or .50 (strong), based on Cohen's (1988) classification.

4. At what school levels were Teach for America teachers placed?

TFA teachers were primarily assigned to M-DCPS senior high schools, but varied in terms of grade organization, subject area, and level of the courses. Tables 1 lists the total number of schools with TFA teachers, the total number of TFA teachers in those schools, and the number and percent TFA teachers assigned to teach reading and/or mathematics to grades 3-10, within each school type.

Table 1. Schools with Teach for America Teachers, 2012-13

			Reading/Mathematics Grades 3-10	
Level	Number of Schools	Number of Teachers	*n*	%
Elementary	10	51	28	54.9
K - 8	3	16	11	68.8
Middle	8	59	43	72.9
Senior	9	159	94	59.2
Total	30	285	176	61.8

Note. Percentages shown are within school type (row) and cannot be added together

- Nearly 300 TFA teachers were assigned to 30 schools during 2012-13; more than half of which were assigned to senior high schools.
- Over 60% of TFA teachers were assigned to teach reading and/or mathematics to grades 3-10.

5. What types of courses were TFA teachers assigned to teach during 2012-13?

Tables 2 (reading) and 3 (mathematics) list the course group (first seven digits of course number); Category; and, the number and percent of class periods to which TFA teachers were assigned, within school level: Elementary (Grades 3-5), Middle (Grades 6-8), and Senior (Grades 9-10). Categories represent courses that serve distinct groups of students. See Appendix A for a description of the groups used. Core and Elective course categories, which are partitioned into separate categories for matching purposes, are accompanied by letter superscripts to indicate they are assumed to serve similar groups of students. The number and percent of class periods are estimates based on the proportion of students assigned to each unique course number. Counts are duplicated, as teachers may be assigned to teach multiple courses.

- Reading/Language Arts (see Table 2)
  - Elementary: TFA teachers' language arts course assignments were primarily comprised of standard education courses.
    - 14.5% were comprised of ESOL /ESOL related courses.
    - 79.8% were comprised of standard education courses.
    - 9.5% were comprised of advanced courses.
  - Middle: The TFA teachers' language arts course assignments were concentrated among standard education and elective courses.
    - 32.4% were comprised of intensive/ESOL related courses.
    - 60.8% were comprised of standard education or elective courses.
    - 7.8% were comprise of advanced courses.

- Senior: The TFA teachers' language arts course assignments were concentrated among basic and standard education/elective courses.
  - 42.1% were comprised of compensatory/ESOL related courses
  - 39.9% were comprised of standard education courses.
  - 16.9% were comprised of advanced courses.

Table 2. Teach for America Teachers' Language Arts/Reading Course Assignments, 2012-13

		Class Periods	
Course Name/Course Group	Category	*n*	*%*
Elementary (Grades 3-5)			
English for Speakers of Other Languages, Grade 3 - 5010010E1	1	3	2.9
English for Speakers of Other Languages, Grade 4 - 5010010F1	1	2	1.9
English for Speakers of Other Languages, Grade 5 - 5010010G1	1	1	1.0
Language Arts/Reading, ESOL-Related - Grade 3, 5010044EE	2	3	2.9
Language Arts/Reading, ESOL-Related - Grade 4, 5010045,50FE	2	3	2.9
Language Arts/Reading, ESOL-Related - Grade 5, 5010046,50GE	2	3	2.9
Language Arts/Reading, Grade 3, 5010044E1	3	41	39.4
Language Arts/Reading, Grade 4, 5010045,50F1	3	28	26.9
Language Arts/Reading, Grade 5, 5010046,50G1	3	14	13.5
Language Arts/Reading, Gifted - Grade 3, 5010044,50E2	4	2	1.9
Language Arts/Reading, Gifted - Grade 4, 5010045,50F2	4	4	3.8
Language Arts/Reading, Gifted - Grade 5, 5010046,50F2	4	4	3.8
Total		104	100.0
Middle (Grades 6-8)			
M/J Intensive Reading (MC) Plus, 1000010PL	1	12	7.2
M/J Intensive Reading (MC) Grade 6, 100001006	1	14	8.4
M/J Intensive Reading (MC) Grade 7, 100001007	1	10	6.0
M/J Intensive Reading (MC) Grade 8, 100001008	1	13	7.8
M/J Devel. Lang. Arts ESOL (Reading) Level 1, 1002381L1	2	0	0.0
M/J Devel. Lang. Arts ESOL (Reading) Level 2, 1002381L2	2	2	1.2
M/J Devel. Lang. Arts ESOL (Reading) Level 3, 1002381L3	2	0	0.0
M/J Language Arts 2 Through ESOL, 100201002	2	3	1.8
M/J Language Arts 1, 100101001	3[a]	12	7.2
M/J Language Arts 2, 100104001	3[a]	42	25.3
M/J Language Arts 3, 100107001	3[a]	12	7.2
M/J Creative Writing 1, 100900001	4[a]	24	14.5
M/J Journalism 1, 100600001	4[a]	4	2.4
M/J Speech and Debate 1, 100700001	4[a]	7	4.2
M/J Language Arts 1, Advanced, 100102001	5	3	1.8
M/J Language Arts 2, Advanced, 100105001,2	5	8	4.8
M/J Language Arts 3, Advanced, 100108001	5	2	1.2
Total		166	100.0

(*table continues*)

Table 2, continued

Course Name/Course Group	Category	Class Periods *n*	Class Periods %
Senior (Grades 9-10)			
Intensive Reading/Plus/Enrichment/Retakers, 1000410, 01, 02, EN, RT	1	112	31.2
English 1 Through ESOL, 100230002	2	5	1.4
English 2 Through ESOL, 100231002	2	4	1.1
English 3 Through ESOL, 100232002	2	6	1.7
Devel. Lang. Arts ESOL Reading Level 1/2, 1002381L1,2	2	16	4.5
Devel. Lang. Arts ESOL Reading Level 3/4 , 1002381L3,4	2	8	2.2
English 1, 100131001	3[b]	32	8.9
English 2, 100134001	3[b]	35	9.7
English 3, 100137001	3[b]	6	1.7
Florida's Pre-IB English 1/2, 1001800, 810	4[b]	4	1.1
Debate 1, 100733001	4[b]	30	8.4
Journalism 1,2, 1006300, 310	4[b]	7	1.9
Speech 1, 100730011	4[b]	32	8.9
Writing for College Success, 100937001	4[b]	1	0.3
English 1 Honors/Gifted, 100132001,2	5	26	7.2
English 2 Honors/Gifted, 100135001,2	5	26	7.2
English Honors 3, 100138001	5	6	1.7
Debate 3/4 Honors, 100735,60	5	3	0.8
Total		359	100.0

Note. Course groups are the first seven digits of the course number and are organized within categories representing courses that serve distinct groups of students. Courses with class periods displayed as zeroes contain fewer than eight percent of the TFA teachers' students. Counts are duplicated, as teachers may be assigned to teach multiple courses.

[a,b]Core and Elective courses with the same letter superscripts are assumed to serve similar groups of students.

- Mathematics (Table 3)
  - Elementary: TFA teachers' mathematics course assignments were almost solely comprised of standard education courses.
    - 11.2% were comprised of ESOL related mathematics courses.
    - 80.0% were comprised of standard education courses.
    - 8.7% were comprised of advanced courses.
  - Middle: TFA teachers' mathematics course assignments were mainly comprised of basic and standard education courses.
    - 35.7% were comprised of intensive mathematics courses.
    - 49.3% were comprised of standard education courses.
    - 15.0% were comprised of advanced courses.
  - Senior: TFA teachers' mathematics course assignments were comprised of one-half standard education courses and one-half basic/advanced courses.
    - 25.0% were comprised of intensive mathematics courses.
    - 57.5% were comprised of standard education courses.
    - 17.5% were comprise of advanced courses.

Table 3. Teach for America Teachers' Mathematics Course Assignments, 2012-13

Course name/course group	Category	Class Periods *n*	Class Periods *%*
Elementary (Grades 3-5)			
Mathematics - Grade Three ESOL-Related, 5012050EE	1	6	5.2
Mathematics - Grade Four ESOL-Related, 5012060FE	1	2	1.7
Mathematics - Grade Five ESOL-Related, 5012070GE	1	5	4.3
Mathematics - Grade Three, 5012050E1	2	48	41.7
Mathematics - Grade Four, 5012060F1	2	24	20.9
Mathematics - Grade Five, 5012070G1	2	20	17.4
Mathematics - Grade Four Gifted, 5012060F2	3	2	1.7
Mathematics - Grade Five Gifted, 5012070G2	3	8	7.0
Total		115	100.0
Middle (Grades 6-8)			
M/J Intensive Mathematics, 120400001	1	50	35.7
M/J Mathematics 1, 120501001	2 [a]	21	15.0
M/J Mathematics 2, 120504001	2 [a]	13	9.3
M/J Pre-Algebra, 120507001	3 [a]	21	15.0
Integrated Mathematics 2, 120732001	3 [a]	8	5.7
Integrated Mathematics 3, 120733001	3 [a]	6	4.3
M/J Mathematics 1, Advanced/Gifted, 120502001	4	7	5.0
M/J Mathematics 2, Advanced, 120505001	4	5	3.6
Algebra 1 Honors, 120032001	4	9	6.4
Total		140	100.0
Elementary (Grades 9-12)			
Intensive Mathematics, 120040001	1	50	25.0
Algebra 1, 120031001	2 [b]	25	12.5
Algebra 2, 120033001	2 [b]	7	3.5
Geometry, 120631001	2 [b]	50	25.0
Math for College Readiness, 120070001	3 [b]	6	3.0
Integrated Mathematics 2, 120732001	3 [b]	24	12.0
Integrated Mathematics 3, 120733001	3 [b]	3	1.5
Algebra 1 Honors, 120032001	4	15	7.5
Algebra 2 Honors, 120034001	4	5	2.5
Geometry Honors/Gifted, 120632001,2	4	15	7.5
Total		200	100.0

Note. Course groups are the first seven digits of the course number and are organized within categories representing courses that serve distinct groups of students. Counts are duplicated, as teachers may be assigned to teach multiple courses.

[a,b]Core and Elective courses with the same letter superscripts are assumed to serve similar groups of students.

6. What was of the impact of the TFA teachers on students' weighted learning gains?

The impact of TFA teachers on students' weighted learning gains was examined by comparing the proportion of TFA and Non-TFA teachers' students who made such gains and gauging the statistical significance of any differences found using chi-squared tests. Tables 4 (reading) and 5 (mathematics) list the total number of comparisons and the number and percentage of students who made gains when taught by TFA and Non-TFA teachers, followed by the results of chi-squared tests (χ^2) and phi coefficients used to gauge the statistical and practical significance of any differences found, for the 2012-13 school year, by grade within school type: 4-5 (elementary), 6-8 (middle), and 9-10 (senior). Results from any K-8 centers are partitioned into elementary and middle grades. Statistically significant differences are indicated by asterisks following the results of the chi-squared test. The direction and practical significance (size) of the statistically significant difference is given by the phi (φ) coefficient: Positive signs indicate that higher percentages of students made gains when taught by TFA teachers when compared to Non-TFA teachers. Negative signs indicate that lower percentages of students made gains when taught by TFA teachers when compared to Non-TFA teachers.

Table 4. Comparison of TFA and Non-TFA Teachers' Students' Weighted Learning Gains in Reading

	TFA[a]				Non-TFA[a]					
	Total	Total	Gain		Total	Total	Gain		Difference	
Grade	Teachers	Students	n	%	Teachers	Students	n	%	χ^2	φ
Elementary (Grades 4-5)										
4	14	160	77	48.1	14	153	89	58.2	3.2	-.10
5	10	142	87	61.3	10	135	82	60.7	0.0	.01
ALL	24	302	164	54.3	24	288	171	59.4	1.5	-.05
Middle (Grades 6-8)										
6	20	257	137	53.3	20	290	108	37.2	14.2 ***	.16
7	30	712	436	61.2	30	659	384	58.3	1.3	.03
8	32	943	706	74.9	32	806	578	71.7	2.2	.04
ALL	82	1,912	1,279	66.9	82	1,755	1,070	61.0	14.0 ***	.06
Senior (Grades 9-10)										
9	62	1,779	937	52.7	62	1,731	945	54.6	1.3	-.02
10	86	2,892	1,728	59.8	86	2,758	1,769	64.1	11.5 ***	-.05
ALL	148	4,671	2,665	57.1	148	4,489	2,714	60.5	11.0 ***	-.03

Note. The gains displayed above are the Weighted Learning Gains defined by the Florida Department of Education for use in the state's school grading system. Chi-squared (χ^2) tests measure the difference in the proportion of the groups' students who made gains with, statistically significant differences indicated by asterisks (*). Phi (ϕ) coefficients are effect sizes that indicate the direction and practical significance of those differences, which have been classified as .10 (weak), .30 (moderate), and .50 (strong) by Cohen (1988). Positive coefficients favor the Teach for America (TFA) teachers, while negative coefficients favor the Non-TFA teachers.

[a] Teach for America

*** $p < .001$.

- Reading (Table 4)
  - The percentage of students who made gains was highest at the middle and lower at the elementary and high schools for both TFA and Non-TFA teachers.
  - Of the seven by-grade comparisons, only two were statistically significant. The moderate difference seen for Grade 6 favored the TFA teachers, while the difference seen for Grade 10 favored the non-TFA teachers.

Table 5. Comparison of TFA and Non-TFA Teachers' Students' Weighted Learning Gains in Mathematics

	TFA [a]				Non-TFA [a]					
	Total	Total	Gain		Total	Total	Gain		Difference	
Grade	Teachers	Students	*n*	%	Teachers	Students	*n*	%	χ^2	Φ
Elementary (Grades 4-5)										
4	10	189	119	63.0	10	140	105	75.0	5.4 *	-.13
5	12	165	86	52.1	12	153	93	60.8	2.4	-.09
ALL	22	354	205	57.9	22	293	198	67.6	6.4 *	-.10
Middle (Grades 6-8)										
6	16	505	201	39.8	16	366	113	30.9	7.3 **	.09
7	24	771	609	79.0	24	712	546	76.7	1.1	.03
8	18	727	437	60.1	18	710	470	66.2	5.7 *	-.06
ALL	58	2,003	1,247	62.3	58	1,788	1129	63.1	0.3	-.01
Senior (Grades 9-10)										
9	30	1,338	1,108	82.8	30	1,190	926	77.8	10.0 **	.06
10	36	1,330	1,021	76.8	36	1,179	840	71.2	9.9 **	.06
ALL	66	2,668	2,129	79.8	66	2,369	1,766	74.5	19.7 **	.07

Note. The gains displayed above are the Weighted Learning Gains defined by the Florida Department of Education for use in the state's school grading system. Chi-squared (χ^2) tests measure the difference in the proportion of the groups' students who made gains with, statistically significant differences indicated by asterisks (*). Phi (ϕ) coefficients are effect sizes that indicate the direction and practical significance of those differences, which have been classified as .10 (weak), .30 (moderate), and .50 (strong) by Cohen (1988). Positive signs in this analysis favor Teach for America (TFA) teachers, while negative signs favor Non-TFA teachers.

[a] Teach for America

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

- Mathematics (Table 5)
  - The percentage of students who made gains was lowest in the sixth grade for both TFA and Non-TFA teachers.
  - The percentage of students who made learning gains was higher in the senior high grades for both TFA and Non-TFA teachers, likely due to change in the test type at those grades from comprehensive mathematics tests to subject specific End of Course Exams.
  - Of the seven by-grade comparisons, five were statistically significant. Three differences seen for Grades 6, 9 and 10 favored the TFA teachers, while the two differences seen for Grades 4 and 8 favored the non-TFA teachers.

7. How long do TFA teaches remain employed in the District after completing their commitment to the program?

The amount of time TFA teachers continued teaching in the District, once their committment to the program was completed, was also examined. Table 6 lists the total number of TFA teachers employed each year and the number and percent who were still teaching in 2012-13, grouped by their final year of TFA service.

Table 6. Number and Percent of TFA Teachers Still Teaching in the District

		Teaching (2012-13)	
Final TFA Year	Total TFA Teachers	n	%
2011-12	93	24	25.8
2010-11	54	0	0.0
2009-10	56	5	8.9
2008-09	41	1	2.4
ALL	244	30	12.3

- Of the 93 TFA teachers who were scheduled to enter their first year of post-TFA service in 2012-13, only 25.8% taught in the District.
- Of the 244 TFA teachers who completed their committment since 2008-09, only 12% were still teaching in the District at the end of 2012-13.

8. What were the principal conclusions of this report?

The majority of TFA teachers were assigned to teach core reading and mathematics courses in grades 3-10. Of those teachers, over 60% were assigned to teach standard education courses in and fewer than one-sixth were assigned to teach advanced courses in either reading or mathematics. When the learning gains made by students of TFA teachers are compared with those made by students of their Non-TFA counterparts who were assigned to similar courses, a consistent impact in senior high mathematics was found, that manifested when weighted learning gains were compared. No consistent benefit in reading was found. As weighted learning gains assign extra bonus points for growth seen among students who are already proficient, this finding supports the notion seen in (Urdegar, 2013) that TFA teachers are more effective teaching proficient students in standard education and advanced mathematics courses. The vast majority of TFA teachers do not continue teaching in the district after completing their commitment with the program, with over 85% over the last four years leaving service in the District.

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Appendix A - Course Categorization and Matching

In order to conduct the analysis of TFA teachers' course assignments and identify comparison teachers for the impact analyses, the courses of all teachers serving Grades 3-10 in schools with TFA teachers were partitioned into distinct categories, according to the classification scheme shown in Table A.

Table A. Course Categories/Levels

	Language Arts			Mathematics		
	Elementary	Middle	Senior	Elementary	Middle	Senior
Special Education	0	0	0	0	0	0
ESOL	1	--	--	--	--	--
Intensive	--	1	1	--	1	1
ESOL Strategies	2	2	2	1	--	--
Standard Education - Core[a]	3	3	3	2	2	2
Standard Education - Elective[a]	--	4	4	--	3	3
Advanced/Gifted/Honors/AP	4	5	5	3	4	4

Note. Each category except Core and Elective is assumed to serve a distinct subpopulation of students

ESOL - English for Speakers of Other Languages

[a]Core and Elective courses are assumed to serve the same subpopulation of students, but are partitioned into separate categories for matching purposes.

The matching process involved two stages. First, the proportion of each teacher's students within each of the six course categories and the number of students with learning gains were computed separately for each subject area within each grade that they taught. Second , a comparison group for the TFA teachers was identified by matching according to grade, subject area, the proportion of the teacher's course assignments in each of the six predefined categories, and number of students, using Multivariate and Propensity Score Matching Software with Automated Balance Optimization (Mebane & Sekhon, 2011; Sekhon, 2011) in R version 3.0.0 (R Development Core Team, 2013).