

Summary statistics of sample teachers and students

	Mean	SD
Teacher-level, N=306		
Novice (first year of data)	0.11	0.31
Trad. Certified	0.86	0.34
Ed. Bachelors	0.52	0.50
Elem. Math Certified	0.14	0.35
Masters	0.77	0.42
Student-level, N=10233		
Male	0.49	0.49
Black	0.40	0.49
Asian	0.08	0.27
Hispanic	0.23	0.42
Other Race/Ethnicity	0.04	0.19
FRPL Eligible	0.64	0.48
Special Ed.	0.10	0.30
English Language Learner	0.20	0.40
<i>Note</i> : Polychoric, tetrachoric, biserial, polyserial correla	0.11	0.89
Baseline Math Test Score - Alternative	-0.01	0.96

Table 1. Descriptions of

Effort

Efficacy

Locus of Control

Teacher PD

School Resources

Note : For the efficacy at

teacher characteristics

Items	Alpha 2010-1
Time spent per week: grading math assignments; gathering and organizing math lesson material; reviewing the content of specific math lessons; preparing for a math lesson by trying out explanations or working through examples of problems; and helping students learn any subject after school hours	0.73
Beliefs on ability to: craft good questions for students; provide alternative explanations or examples to confused students; use variety of assessment strategies to help students learn; implement alternative teaching strategies; control disruptive behavior; motivate less interested students; calm disruptive or noisy students; help children value learning; get children to follow classroom rules; get students to believe that they can do well; establish classroom management systems; assist families in helping children do well	0.66
Beliefs on: amount students learn due to family background or student effort; limitations due to student home environment or effort; whether students have unchangeable amounts of intelligence	0.55
Time spent studying or learning from workshops, coaching, conferences, and coursework about: how students learn math; math instruction and pedagogy; math content; math curriculum materials expected to use; results of state standardized or district benchmark testing in any subject; general instruction or pedagogy	
Perceptions on: school resource support for teaching math; ability to use personal judgment to design and deliver instruction; enjoyment teaching in school; frequency of instruction being interrupted (reversed); having materials to teach; access to professional growth opportunities; difficulty in getting students resources (reversed); maintenance of school facilities; respect from others in the school	0.80

nd locus of control measures, items and scales changed from 2010-11 to 2011-12. Scores are thusly standardized within

Alpha 2011-1: Alpha 2012-13

0.73

0.86

0.93

0.85

0.86

0.78

0.75

school year.

Table 2. Correlations between teacher characteristics

	Novice	Math Courses	Math Content Courses	Math Methods Courses	Trad. Certified
Novice	1.00				
Math Courses	-0.29	1.00			
Math Content Courses	-0.38	0.55	1.00		
Math Methods Courses	-0.38	0.53	0.77	1.00	
Trad. Certified	-0.24	-0.10	0.21	0.16	1.00
Ed. Bachelors	-0.14	-0.05	0.11	0.22	0.59
Elem. Math Certified	0.02	0.15	0.09	0.07	-0.37
Masters	-0.41	0.00	0.02	-0.05	0.02
Accuracy	0.01	-0.08	-0.02	-0.04	0.13
KOSM	-0.08	0.10	-0.01	-0.02	0.04
MKT/MTEL	0.12	0.05	0.03	0.04	0.01
Effort	-0.01	0.25	0.15	0.15	-0.05
Efficacy	-0.21	0.11	0.01	0.05	-0.14
Locus of Control	0.03	-0.07	-0.01	0.00	-0.01
Teacher PD	0.08	0.25	0.18	0.13	-0.23
School Resources	-0.08	0.10	0.06	0.02	-0.24

Note: Polychoric, tetrachoric, biserial, polyserial correlations coefficients reported when appropriate. Correlation

Ed. Bachelors	Elem. Math Certified	Masters	Accuracy	KOSM	MKT/MTEL	Effort	Efficacy
1.00							
0.19	1.00						
-0.34	-0.04	1.00					
0.06	0.08	0.15	1.00				
-0.03	-0.07	0.19	0.09	1.00			
-0.04	0.00	0.05	0.25	0.14	1.00		
-0.01	-0.03	-0.11	-0.09	-0.10	-0.14	1.00	
0.00	0.14	-0.09	-0.02	-0.03	0.04	0.08	1.00
-0.02	0.10	-0.02	-0.10	0.01	-0.07	-0.12	-0.27
0.01	0.17	-0.17	-0.12	-0.09	-0.10	0.33	0.17
-0.10	-0.02	0.09	-0.09	0.04	0.02	0.06	0.25

between measures and Accuracy or KOSM at the teacher-grade-level. Correlations with Novice using status as of first year of NCTI

Locus of Control	Teacher PD	School Resources
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1.00		
-0.10	1.00	
-0.15	0.15	1.00

E participation. N=306.

Table 3. Multilevel regression output for relationships between teacher characteristics and student outcomes

	Project-Developed Mathematics Test					Teacher Experiences
	Teacher Experiences	Knowledge	Mindset or Beliefs	Resources	All	
Novice (first year of data)	-0.009				-0.036	-0.071
Math Courses	-0.016				-0.020	-0.006
Math Content/Methods Courses	0.046**				0.044*	0.038~
Trad. Certified	-0.075*				-0.070~	-0.045
Ed. Bachelors	0.018				0.012	0.045~
Elem. Math Certified	-0.034				-0.031	-0.042
Masters	-0.007				-0.021	0.025
Accuracy		0.044***			0.044***	
KOSM		-0.012			-0.009	
MKT/MTEL		0.017			0.018~	
Effort			0.008		0.008	
Efficacy			-0.010		-0.006	
Locus of Control			-0.020*		-0.016	
Teacher PD			0.005		0.003	
School Resources				0.010	0.008	
Missing Data Indicator						
Background Questionnaire	x	x	x	x	x	x
Fall Questionnaire	x	x	x	x	x	x
Spring Questionnaire	x	x	x	x	x	x
Value-Added Model Controls						
Baseline Test Performance	x	x	x	x	x	x
Student Demographics	x	x	x	x	x	x
Peer Effects	x	x	x	x	x	x
Cohort Effects	x	x	x	x	x	x
Grade-Year FE	x	x	x	x	x	x
School FE	x	x	x	x	x	x
District FE	x	x	x	x	x	x
# Students	10233	10233	10233	10233	10233	10233
# Teachers	306	306	306	306	306	306
Pseudo R2	0.08	0.16	0.06	0.00	0.25	0.03
Adjusted Pseudo R2	0.06	0.15	0.04	-0.01	0.21	0.00
Wald test - p-value	0.13	0.00	0.23	0.38	0.00	0.06

Note: Fixed effects (FE). ***p<0.001 **p<0.01 *p<0.05 ~p<0.10

State Standardized Mathematics Test

Knowledge	Mindset or Beliefs	Resources	All
			-0.075~
			-0.015
			0.044*
			-0.060
			0.040
			-0.037
			0.016
0.027*			0.024*
0.012			0.016
0.011			0.013
	0.035**		0.038**
	-0.007		-0.001
	-0.009		-0.008
	-0.014		-0.013
		-0.020	-0.021
x	x	x	x
x	x	x	x
x	x	x	x
x	x	x	x
x	x	x	x
x	x	x	x
x	x	x	x
x	x	x	x
x	x	x	x
x	x	x	x
10233	10233	10233	10233
306	306	306	306
0.04	0.07	0.02	0.18
0.03	0.06	0.02	0.14
0.04	0.04	0.11	0.00

Table 4. Multilevel regression output for relationships between within-year estimates

	Project-Developed	
	Resources	All
Novice (first year of data)		-0.093
Math Courses		-0.050**
Math Content/Methods Courses		0.048*
Trad. Certified		-0.090*
Ed. Bachelors		-0.026
Elem. Math Certified		-0.014
Masters		0.010
Accuracy		0.022
KOSM		0.002
MKT/MTEL		0.011
Effort		0.019
Efficacy		-0.017
Locus of Control		-0.030**
Teacher PD - year specific	0.004	0.002
School Resources - year specific	-0.027	-0.025
Missing Data Indicator		
Background Questionnaire	x	x
Fall Questionnaire	x	x
Spring Questionnaire	x	x
Value-Added Model Controls		
Baseline Test Performance	x	x
Student Demographics	x	x
Peer Effects	x	x
Cohort Effects	x	x
Grade-year FE	x	x
School FE	x	x
District FE	x	x
# Students	5875	5875
# Teachers	217	217

Note: Fixed effects (FE). ***p<0.001 **p<0.01 *p<0.05 ~p<0.10

ited resource variables and student outcomes

State	
Resources	All
	0.017
	-0.041*
	0.049*
	0.005
	0.024
	-0.019
	0.031
	0.032*
	0.033**
	-0.007
	0.053***
	0.017
	0.004
0.003	-0.010
-0.061**	-0.061**
x	x
x	x
x	x
x	x
x	x
x	x
x	x
x	x
x	x
x	x
5875	5875
217	217

Table XX. Regressions using any teachers with data

	Project-Developed Mathematics Test					Teacher Experiences
	Teacher Experiences	Knowledge	Mindset or Beliefs	Resources	All	
Novice (first year of data)	-0.012				-0.007	-0.071
Math Courses	-0.018				-0.038*	-0.009
Math Content/Methods Courses	0.050**				0.049*	0.042*
Trad. Certified	-0.027				-0.017	-0.008
Ed. Bachelors	-0.001				-0.035	0.0018
Elem. Math Certified	-0.010				-0.021	-0.023
Masters	-0.005				0.002	0.020
Accuracy		0.039**			0.042**	
KOSM		-0.016			-0.013	
MKT/MTEL		0.016			0.012	
Effort			0.012		0.005	
Efficacy			-0.005		0.024*	
Locus of Control			-0.006		-0.003	
Teacher PD			0.006		0.010	
School Resources				0.010	-0.016	
Missing Data Indicator						
Background Questionnaire	x	x	x	x	x	x
Fall Questionnaire	x	x	x	x	x	x
Spring Questionnaire	x	x	x	x	x	x
Value-Added Model Controls						
Baseline Test Performance	x	x	x	x	x	x
Student Demographics	x	x	x	x	x	x
Peer Effects	x	x	x	x	x	x
Cohort Effects	x	x	x	x	x	x
Grade-Year FE	x	x	x	x	x	x
School FE	x	x	x	x	x	x
District FE	x	x	x	x	x	x
# Students	9432	9648	8470	10029	7782	9432
# Teachers	275	285	207	296	190	275

Note: Fixed effects (FE). ***p<0.001 **p<0.01 *p<0.05 ~p<0.10

State Standardized Mathematics Test

Knowledge	Mindset or Beliefs	Resources	All
			-0.078
			-0.039*
			0.057*
			-0.030
			0.016
			-0.039
			0.010
0.021			0.024
0.007			0.019
0.019			0.018
	0.053***		0.052***
	0.007		0.029*
	0.006		0.005
	-0.031*		-0.025
		-0.020	-0.029~
x	x	x	x
x	x	x	x
x	x	x	x
x	x	x	x
x	x	x	x
x	x	x	x
x	x	x	x
x	x	x	x
x	x	x	x
9648	8470	10029	7782
285	207	296	190

Table XX. Regressions using only teachers with no missing data

	Project-Developed Mathematics Test					Teacher Experiences
	Teacher Experiences	Knowledge	Mindset or Beliefs	Resources	All	
Novice (first year of data)	-0.001				-0.007	-0.085
Math Courses	-0.037*				-0.038*	-0.030
Math Content/Methods Courses	0.054**				0.049*	0.047~
Trad. Certified	-0.036				-0.017	-0.003
Ed. Bachelors	-0.034				-0.035	0.001
Elem. Math Certified	-0.002				-0.021	-0.020
Masters	0.000				0.002	0.019
Accuracy		0.039**			0.042**	
KOSM		-0.018			-0.013	
MKT/MTEL		0.014			0.012	
Effort			0.009		0.005	
Efficacy			0.010		0.024*	
Locus of Control			-0.000		-0.003	
Teacher PD			0.005		0.010	
School Resources				-0.010	-0.016	
Missing Data Indicator						
Background Questionnaire	x	x	x	x	x	x
Fall Questionnaire	x	x	x	x	x	x
Spring Questionnaire	x	x	x	x	x	x
Value-Added Model Controls						
Baseline Test Performance	x	x	x	x	x	x
Student Demographics	x	x	x	x	x	x
Peer Effects	x	x	x	x	x	x
Cohort Effects	x	x	x	x	x	x
Grade-Year FE	x	x	x	x	x	x
School FE	x	x	x	x	x	x
District FE	x	x	x	x	x	x
# Students	7782	7782	7782	7782	7782	7782
# Teachers	190	190	190	190	190	190

Note: Fixed effects (FE). ***p<0.001 **p<0.01 *p<0.05 ~p<0.10

State Standardized Mathematics Test

Knowledge	Mindset or Beliefs	Resources	All
			-0.078
			-0.039*
			0.057*
			-0.030
			0.016
			-0.039
			0.010
0.025			0.024
0.008			0.,019
0.019			0.018
	0.050**		0.052***
	0.016		0.029*
	0.007		0.005
	-0.032*		-0.025
		-0.026~	-0.029~
x	x	x	x
x	x	x	x
x	x	x	x
x	x	x	x
x	x	x	x
x	x	x	x
x	x	x	x
x	x	x	x
7782	7782	7782	7782
190	190	190	190
