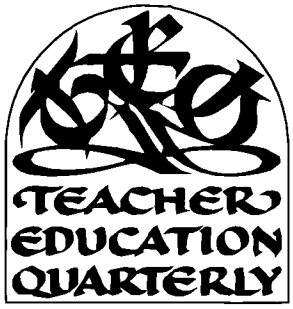

How Cooperating Teachers and University Supervisors Shape Elementary Candidates' Opportunities To Learn and Receive Feedback on English Language Arts Instruction

Jason M. Miler, Peter Youngs, Dorothea Anagnostopoulos, & Corey Drake

Abstract

Preservice field placements and student teaching experiences have been identified as influential factors in elementary teaching candidates' (ETCs) development as teachers. This study examined several factors during the student teaching experience, including the English language arts (ELA) teaching self-efficacy of cooperating

Jason M. Miller is an assistant professor in the Department of Teaching, Learning, and Educational Leadership in the College of Education and Applied Human Services at Eastern Kentucky University, Richmond, Kentucky. Peter Youngs is a professor in the Department of Curriculum, Instruction,and Special Education in the School of Education and Human Develoment at the Universiy of Virginia, Charlotttesville,Virginia. Dorothea Anagnostopoulos is associate dean of academic affairs and professor in the Department of Curriculum and Instruction in the Neag School of Education at the University of Connectituct, Storrs, Connecticut. Corey Drake is senior director of professional learning at the Math Learning Center in Salen, Oregon. Email addresses: jason.miller2@eku.edu, pay2n@virginia, dorothea.anagnostopoulos@uconn.edu, & coreyd@mathlearningcenter.org

teachers (CTs) and university supervisors (USs), ETCs' perceptions of CT and US quality in ELA, CT and US public school teaching experience, and ETCs' opportunities to learn ELA instruction. Using a multiple regression analysis that included 192 ETCs linked with their CTs and USs, this study found several of these factors to be significantly associated with ETCs' perception of US quality and ETCs' opportunities to learn ELA instruction. These findings have implications for policy, practice, and research related to teacher preparation programs and field placement and student teaching experiences.

Introduction

Preservice teaching candidates typically identify their field or student teaching placements as the most influential factor in their development as teachers (Hollins & Guzman, 2005). During field placements, elementary teaching candidates (ETCs) have frequent opportunities to learn, try out, and receive feedback on instructional strategies in English language arts (ELA) and other subjects from cooperating teachers (CTs) and university supervisors (USs; Boyd et al., 2009; Ronfeldt et al., 2018). They are also able to make connections between university coursework and the realities of elementary classrooms and observe CTs and other experienced teachers model effective practices (Feiman-Nemser, 2001; Hammerness & Klette, 2015). Given the salience of student teaching, researchers have examined associations between features of field placements and beginning teachers' classroom observation ratings and effectiveness (Bastian et al., 2022; Goldhaber et al., 2020; Ronfeldt et al., 2018; Ronfeldt & Reininger, 2012). These features include CTs' observation ratings and effectiveness as well as ETCs' perceptions of CT quality.

At the same time, few studies have examined how the ELA teaching self-efficacy of CTs and USs or ETCs' perceptions of CT and US quality are associated with candidates' opportunities to learn, try out, and receive feedback on ELA instruction strategies during student teaching. Factors associated with candidates' field placement learning opportunities are important to explore because such opportunities are themselves linked to key beginning teacher outcomes, including instructional quality and effectiveness. This study addresses this gap in the literature by drawing on survey data from 192 elementary candidates at five universities and their CTs and USs who all participated in the Elementary Teacher Preparation Project[1] (ETPP). We investigated how CTs' and USs' self-efficacy regarding ELA instruction and candidates' perceptions regarding the quality of their CTs and USs were associated with candidates' reported opportunities to learn, try out, and receive feedback on ELA instruction.

Literature Review

How Cooperating Teachers Influence Beginning Teachers

Several studies have examined ways in which policies related to CTs and CTs themselves can influence novice teachers. For example, Boyd et al. (2009)

drew on data from beginning elementary teacher graduates of 26 university-based preparation programs and 5 alternate certification programs to examine whether program policies regarding CTs predicted beginning teacher effectiveness. They found that preparation program oversight of the selection of CTs, requirements for CT experience, and continuity of their participation in mentoring candidates were associated with novice teacher effectiveness in ELA and mathematics.

In research on elementary and middle school teachers, Goldhaber et al. (2020) found that mentor (i.e., cooperating) teacher effectiveness in ELA was modestly associated with novice teacher effectiveness in ELA and that mentor effectiveness in mathematics was significantly associated with novice teacher effectiveness in mathematics. Ronfeldt et al. (2018) reported that beginning elementary and secondary teachers received higher classroom observation ratings and value-added (VAM) scores in ELA and mathematics when they completed student teaching placements with CTs who received higher observation ratings and VAM scores in these subjects, compared to novice teachers who completed field placements with lower-rated CTs. Bastian et al. (2022) found that early-career elementary and secondary teachers earned higher teacher evaluation ratings when they completed student teaching assignments with CTs who themselves received higher evaluation ratings.

In summary, research has indicated that CTs' instructional quality and effectiveness are associated with beginning teachers' instructional quality and effectiveness. There has been less research, though, on factors that seem to predict teaching candidates' perceptions of CT quality. The study reported here investigated how CTs' ELA teaching self-efficacy and years of K–12 teaching experience were associated with elementary candidates' perceptions of CT quality.

Candidate Perceptions of Cooperating Teacher Quality

Researchers have explored how teaching candidates' perceptions of CT quality are associated with key candidate outcomes. For example, Ronfeldt and Reininger (2012) drew on data from a large, urban school district to create a measure of perceived field placement school quality based on candidates' reported levels of satisfaction with their respective CT, other teachers at the school, the school itself, and their overall student teaching experience. They found that elementary and secondary candidates who reported higher-quality field placement experiences were more likely to report feeling prepared to teach, have higher levels of teaching self-efficacy, and plan to persist in teaching.

Berlin et al. (2021) conducted an analysis using data from the same larger study of which the present article is a part, the ETPP. They found that those elementary candidates who reported being placed with higher-quality CTs and having opportunities to learn mathematics strategies in their field placements had higher levels of mathematical knowledge for teaching than those who reported similar learning opportunities, but also reported being placed with lower-quality CTs. The study reported here builds on these studies to examine how perceived

CT quality is associated with ETCs' opportunities to learn, try out, and receive feedback on ELA strategies during their field placements.

How University Supervisors Influence Beginning Teachers

There have been fewer studies on the role of USs in teaching candidate or beginning teacher outcomes. In one exception, Boyd et al. (2009) reported that the number of required US observations and the amount of contact between USs and preparation program faculty were significantly associated with first-year elementary teacher effectiveness in ELA and mathematics.

The study reported here builds on Boyd et al. (2009) by investigating (a) factors that seem to predict ETCs' perceptions of US quality (i.e., USs' ELA teaching self-efficacy and years of K–12 teaching experience) and (b) how perceived US quality is associated with candidates' opportunities to learn, try out, and receive feedback on ELA strategies during their field placements.

Opportunities to Learn

We define opportunities to learn in teacher preparation as the extent to which teaching candidates are exposed to teaching-related content in courses and fieldwork (Schmidt et al., 2011) and the degree to which they have opportunities to try out and receive feedback on instructional strategies (Youngs et al., 2022). Boyd et al. (2009) investigated how different types of learning opportunities were associated with beginning elementary teacher effectiveness. They reported that for candidates in university-based preparation programs, opportunities to learn about the curriculum and how to teach ELA were associated with beginning elementary teachers' effects on students' ELA achievement.

In a study of how six universities prepared elementary candidates to teach ELA, Kennedy (1998) found that when candidates encountered the same ideas about learning to write and teaching writing across their courses and student teaching placements, their programs had a stronger influence on their development of writing instruction. In a study of three preparation programs, Feiman-Nemser et al. (2014) reported that each program's vision of effective teaching was supported by candidates' opportunities to learn instructional strategies, the ways in which they were assessed, and program structures. In addition, program graduates typically appropriated and enacted instructional practices that their programs had emphasized. As noted, the study reported here builds on previous studies by exploring how ETCs' perceptions of CT quality and US quality are associated with their opportunities to learn, try out, and receive feedback on ELA strategies during their field placements.

Teaching Self-Efficacy

Teaching self-efficacy refers to one's beliefs about one's ability to implement

instructional strategies and support student learning. Research has indicated that teachers with higher levels of teaching self-efficacy are more likely than those with low teaching self-efficacy to enact high-quality instruction and promote student achievement in ELA and mathematics (Cantrell & Hughes, 2008; Woolfolk Hoy & Davis, 2006; Zee & Koomen, 2016). ELA teaching self-efficacy involves one's view of oneself as a learner, doer, and teacher of ELA. High levels of ELA teaching self-efficacy are likely to be associated with teachers' willingness to spend more time on ELA instruction and to be more persistent when students have reading difficulties. At the same time, low levels of ELA teaching self-efficacy could lead to students having negative conceptions of reading and writing and teachers having negative beliefs about their own ability to promote student engagement and learning.

There has been little research on CT or US ELA teaching self-efficacy. In this study, we focused on how the ELA teaching self-efficacy of CTs and USs is associated with ETCs' opportunities to learn, try out, and receive feedback on ELA strategies during their field placements.

Conceptual Framework, Hypotheses

Our conceptual framework focuses on two main ways that CTs and USs can potentially shape ETCs' opportunities to learn, try out, and receive feedback on ELA instructional strategies: through CTs' and USs' own self-efficacy with regard to teaching ELA and through candidates' perceptions of CT and US quality.

We theorize that when CTs and/or USs have higher levels of self-efficacy with regard to teaching ELA (i.e., they see themselves as learners, doers, and teachers of ELA), the elementary candidates who work with them will be more likely to (a) have opportunities to learn, try out, and receive feedback on ELA instructional strategies during field placements and (b) perceive them as high quality (Cantrell & Hughes, 2008; Woolfolk Hoy & Davis, 2006; Zee & Koomen, 2016). We also posit that when candidates perceive their CTs and/or USs as high quality, the candidates will be more likely to have opportunities to learn, try out, and receive feedback on ELA instructional strategies during field placements (Boyd et al., 2009; Goldhaber et al., 2020; Ronfeldt et al., 2018). We drew on the aforementioned studies to develop the following hypotheses:

> H_{1A}: *When an elementary teaching candidate's cooperating teacher reports having a high level of ELA teaching self-efficacy, the candidate will be more likely to perceive their cooperating teacher as high quality.*
>
> H_{1B}: *When a cooperating teacher has relatively more experience teaching in public schools, the elementary teaching candidate will be more likely to perceive their cooperating teacher as high quality.*
>
> H_{1C}: *When an elementary teaching candidate's cooperating teacher reports having a high level of ELA teaching self-efficacy, the candidate will report having greater opportunities to learn, try out, and receive feedback on ELA instructional strategies during their field placement.*

H_{1D}: *When an elementary teaching candidate perceives their cooperating teacher as high quality, the candidate will report having greater opportunities to learn, try out, and receive feedback on ELA instructional strategies during their field placement.*

H_{1E}: *When an elementary teaching candidate's cooperating teacher reports having a high level of ELA teaching self-efficacy and the candidate perceives their cooperating teacher as high quality, the candidate will report having greater opportunities to learn, try out, and receive feedback on ELA instructional strategies during their field placement.*

H_{2A}: *When an elementary teaching candidate's university supervisor reports having a high level of ELA teaching self-efficacy, the candidate will be more likely to perceive their university supervisor as high quality.*

H_{2B}: *When a university supervisor has relatively more experience teaching in public schools, the elementary teaching candidate will be more likely to perceive their university supervisor as high quality.*

H_{2C}: *When an elementary teaching candidate's university supervisor reports having a high level of ELA teaching self-efficacy, the candidate will report having greater opportunities to learn, try out, and receive feedback on ELA instructional strategies during their field placement.*

H_{2D}: *When an elementary teaching candidate perceives their university supervisor as high quality, the candidate will report having greater opportunities to learn, try out, and receive feedback on ELA instructional strategies during their field placement.*

H_{2E}: *When an elementary teaching candidate's university supervisor reports having a high level of ELA teaching self-efficacy and the candidate perceives their university supervisor as high quality, the candidate will report having greater opportunities to learn, try out, and receive feedback on ELA instructional strategies during their field placement.*

Methods

This study reports on 192 ETCs who graduated from 5 teacher preparation programs in 3 U.S. states in 2016 and 2017 as well as 192 CTs and 78 unique USs who worked with these 192 candidates during their field placements. We used a quantitative research design, which included descriptive statistics (Acock, 2008), exploratory factor analysis (EFA; Acock, 2013; Costello & Osborne, 2005; Kline, 2016), and multiple regression analysis (Allison, 1998; Gordon, 2015). This section describes our samples, data collection strategies, and research design.

Teacher Education Program Sample

The 5 elementary teacher education programs in our sample collectively prepared approximately 450 ETCs each academic year in 2015–2016 and 2016–2017 (the

years in which we collected data from elementary candidates in these programs for this study). The five programs were at Cardinal, Goldfinch, Meadowlark, Oriole, and Robin universities.[2] All five universities are mid-size to large public universities located in suburban/rural settings in close proximity to urban areas. Two universities are located in the Northeast, one is in the Midwest, and two are in the Mid-Atlantic.

We selected these programs because each incorporated research-based practices in elementary ELA methods courses and carefully structured field placements to support candidates' development and enactment of ambitious instruction in ELA. Research-based practices refer to instructional strategies in ELA that foster students' deep, conceptual understanding of academic content and are associated with student learning (Carlisle et al., 2011; Grossman et al., 2013).

The five programs varied in several ways, including characteristics of the universities (e.g., location, focus) and programs, including length of student teaching and structure and sequence of methods courses and field experiences. Table 1 includes descriptive information about features of these programs and how they varied across the sample. Four of the programs required 12–15 weeks of student teaching, while Meadowlark mandated that candidates complete 30 weeks

Table 1

Descriptive Information for Elementary Teacher Education Programs in the Elementary Teacher Preparation Project Study

Program Feature	*Goldfinch*	*Cardinal*	*Meadowlark*	*Robin*	*Oriole*
Length of program	4-year BA program	5-year BS/ MA program	5-year BA program plus MA credits	4-year BA program	5-year BS/ MA program
Annual no. of elementary graduates	100	40	200	200	60
Required course sequence	no	yes	yes	yes	no
Cohort	yes	yes	partial	yes	no
Required no. of literacy methods courses	2	2	3	3	3
Pre–student teaching field experience	1 day/week for 2 semesters	6 hours/week for 3 semesters	4 hours/week for 2 semesters	6 hours/ week for 1 semester	1 day/week for 1 semester
Length of student teaching (weeks)	15	12	30	15	15
Length of lead responsibility for teaching (weeks)	8	5	10	8	8
Timing of student teaching	fall or spring of 4th year	spring of 4th year	fall and spring of 5th year	spring of 4th year	fall of 5th year

Note. BA = bachelor of arts. MA = master of arts.

of student teaching. Three of the programs required two ELA methods courses, while Oriole and Robin candidates completed three each. Three of the programs followed a cohort model, and three had a required course sequence.

Elementary Teaching Candidate Sample

We invited all ETCs at each program who had completed student teaching and/or were in their final year in either 2015–2016 or 2016–2017 to participate in the study. Of the 904 eligible final-year elementary candidates in 2015–2016 and 2016–2017, 502 (55.5%) completed the ETC survey for our study. We also invited all of the CTs and USs who worked with eligible elementary candidates to each complete one survey. This enabled us to link each eligible candidate with at least one CT and one US. At one university, some candidates were placed with more than one CT. A total of 587 of 989 eligible CTs (59.4%) completed the CT survey, and 120 of 154 eligible USs (77.9%) completed the US survey.

The analyses reported here focused on those ETCs who completed the ETC survey and whose CT and US both completed surveys as well. This resulted in a sample of 192 elementary candidates as well as their CTs and USs.

Measures

We drew on surveys used in prior research (Boyd et al., 2009; Schmidt et al., 2011; Youngs et al., 2022) to create the items that were included in the ETC, CT, and US surveys. The CT and US surveys included a series of items that measured participants' perceptions of their own self-efficacy with regard to teaching ELA (Youngs et al., 2022). The ETC survey included a series of items that asked about candidates' opportunities to learn, try out, and receive feedback on several ambitious ELA instructional strategies during student teaching and about their perceptions of the quality of their CTs and USs (Boyd et al., 2009; Schmidt et al., 2011).

Predictor Variables

We drew on prior research on teaching self-efficacy (Woolfolk Hoy & Davis, 2006) to create five items on the CT survey and four items on the US survey that probed participants' self-efficacy related to teaching ELA (see Table 2). Respondents responded on a 4-point Likert scale indicating the extent to which they agreed with each item. Table 2 presents the CT survey items and US survey items in ELA teaching self-efficacy. We conducted an EFA (Costello & Osborne, 2005) to assess the factor structure of the CT and US survey items separately. Table 2 presents the factor loadings and eigenvalues from a principal-axis EFA.

For the CT survey items, Table 2 indicates that all five survey items loaded onto the CT self-efficacy in ELA factor at a level of .4366 or higher and that four loaded onto this factor at a level of .6260 or higher. These loading coefficients are above

or within the recommended loading level of .400–.500 (Acock, 2013; Costello & Osborne, 2005; Kline, 2016). In addition, it is recommended to keep factors only when they have an eigenvalue larger than 1.000 (Acock, 2013; Costello & Osborne, 2005; Kline, 2016). Only the first factor in this analysis produced an eigenvalue above this threshold (1.912); this result suggests a one-factor solution for the five survey items. We then constructed a latent variable that included the five CT survey items, which created a factor score that accounted for the CTs' responses to all five items. This and the other factors described subsequently were all standardized with a mean of 0 and variance of 1 and used as predictor and/or outcome variables in subsequent analyses.

Table 2 also presents the factor loadings and eigenvalues for the four US survey items using a principal-axis EFA. Three of the items loaded onto the US self-efficacy in ELA factor at a level of .5303 or higher, whereas one loaded onto this factor at a level of .3854. We believe that this item is close enough to the .400 threshold (Acock, 2013; Costello & Osborne, 2005; Kline, 2016) and has sufficient research support to be included in this factor (Woolfolk Hoy & Davis, 2006). The first factor produced an eigenvalue of 1.15484 and was the only factor to produce an eigenvalue above the threshold of 1.000. The findings from this EFA suggested a one-factor solution for the four items; thus a latent variable was created using these items.

We drew on research on CTs to create several items in the ETC survey on perceived CT quality (Boyd et al., 2009; Ronfeldt & Reininger, 2012). For example, we used a set of six items to measure elementary candidates' perceptions of CT

Table 2
Exploratory Factor Analysis:
Cooperating Teacher and University Supervisor Self-Efficacy in English Language Arts

	Factor loading
CT self-efficacy in ELA	
Even if I work hard, I will not teach ELA as well as I will most subjects.	0.6700
I understand ELA concepts well enough to be effective in teaching ELA.	0.6358
I'm not the type to do well in ELA.	0.6901
If I work hard, I am confident in my ability learn new ELA strategies.	0.6260
I have had mostly positive experiences learning ELA.	0.4366
Eigenvalue	1.91181
US self-efficacy in ELA	
I understand ELA concepts well enough to support elementary candidates in teaching ELA.	0.5303
I'm not the type to do well in ELA.	0.6150
If I work hard, I am confident in my ability to learn new ELA strategies.	0.3854
I have had mostly positive experiences learning ELA.	0.5889
Eigenvalue	1.15484

Note. Survey items are taken from the 2015–2016 and 2016–2017 Elementary Teaching Candidate Survey. The stem for these items was as follows: "To what extent do you agree with each of the following?" Response options were on a 4-point Likert-type scale ranging from 1 (strongly disagree) to 4 (strongly agree). CT = cooperating teacher. ELA = English language arts. US = university supervisor.

quality (see Table 3). Table 3 presents the six survey items regarding ETC perceived CT quality as well as the factor loadings and eigenvalues for the principal-axis EFA used to analyze the items' factor structure. All of the items loaded onto the ETC perceived CT quality factor at .6058 or higher, and only one factor produced an eigenvalue greater than the threshold (3.152). The findings from this EFA suggested a one-factor solution for the six items and prompted the creation of a latent variable.

We drew on research on USs to create several items in the elementary candidate survey on perceived US quality (Boyd et al., 2009; Ronfeldt & Reininger, 2012). We used a set of five items to measure elementary candidates' perceptions of US quality (see Table 3). Table 3 presents the five survey items as well as the factor loadings and eigenvalues for the principal-axis EFA. All of the loadings onto *ETC perceived US quality* were higher than .6407, and only one factor loaded above the 1.000 eigenvalue threshold, at 2.94571. These findings suggested a one-factor solution and prompted the creation of a latent variable using the five items.

CT experience as a public school teacher (years) and US experience as a public school teacher (years) were used as predictor variables that represented the number

Table 3
Exploratory Factor Analysis: Elementary Teaching Candidate Perceived Cooperating Teacher and University Supervisor Quality

	Factor loading
ETC perceived CT quality	
My cooperating teacher is an excellent teacher and a worthy role model.	0.8446
My cooperating teacher gave me useful feedback.	0.8240
My cooperating teacher was usually in the room while I taught a lesson.	0.6133
My cooperating teacher was knowledgeable about my teacher education program.	0.6058
I had useful meetings with my cooperating teacher to discuss my teaching.	0.8056
My cooperating teacher allowed me to try out the strategies and techniques I was learning in my teacher education courses.	0.6060
Eigenvalue	3.15163
ETC perceived US quality	
My supervisor gave me useful feedback on my teaching.	0.8211
My supervisor was available to talk with me when I had questions or concerns about teaching.	0.7923
My supervisor observed me on a regular basis.	0.6407
My supervisor provided feedback that was aligned with the theories and practices advocated in my methods courses.	0.8284
My supervisor and cooperating teacher held similar ideas about teaching and learning.	0.7396
Eigenvalue	2.94571

Note. Survey items are taken from the 2015–2016 and 2016–2017 Elementary Teaching Candidate Survey. The stem for these items was as follows: "To what extent do the following statements describe the cooperating teacher/university supervisor you had during your student teaching/internship?" Response options were on a 4-point Likert-type scale ranging from 1 (strongly disagree) to 4 (strongly agree); "not applicable" was an additional possible response. CT = cooperating teacher. ETC = elementary teaching candidate. US = university supervisor.

of years that each CT and US had taught in public schools. These variables came from the CT and US surveys (see Table 4). CTs and USs were prompted to select from one of the following responses: "Not at all" (coded as 1), "Less than 1 year" (coded as 2), "1–2 years" (coded as 3), "3–5 years" (coded as 4), or "6 or more years" (coded as 5). Table 4 presents descriptive statistics for the CT/US experience as a public school teacher predictor variable.

Two interaction predictor variables were constructed for this analysis: CT Self-Efficacy × ETC Perceived CT Quality and US Self-Efficacy × ETC Perceived US Quality. See detailed descriptions of the variables in the preceding discussion. These variables were included in subsequent analyses.

Outcome Variables

We drew on research on opportunities to learn (Boyd et al., 2009; Schmidt et al., 2011) to create 11 items on the ETC survey about opportunities to learn about, try out, and receive feedback on ELA instructional strategies during student teaching (see Table 5). The response categories included "Observed other teachers use this practice with students," "Used this practice with students once or twice," "Used this practice with students three or more times," "Received feedback on my attempts to use this practice with students," and "None of the above." Table 5 presents the 11 survey items as well as the factor loadings and eigenvalues for the principal-axis EFA. All the loadings onto ETC opportunities to learn (OTL) in ELA were higher than .7186; only one factor loaded above the 1.000 eigenvalue threshold, at 7.88359. These findings suggested a one-factor solution; thus, we created a latent variable using the 11 items. In addition, we included the following as outcome variables in some multiple regression models: ETC perceived CT quality and ETC perceived US quality.

Table 4
Cooperating Teacher and University Supervisor Experience as a Public School Teacher: Descriptive Statistics

	Code	*Frequency*	*%*
CT experience as public school teacher			
Not at all	1	2	1.03
Less than 1 year	2	0	0
1–2 years	3	1	0.51
3–5 years	4	4	2.05
6 or more years	5	188	96.41
US experience as public school teacher			
Not at all	1	12	6.09
Less than 1 year	2	0	0
1–2 years	3	16	8.12
3–5 years	4	25	12.69
6 or more years	5	144	73.10

Note. The question for this item was as follows: "For how long have you done each of the following? Taught your own class in a PUBLIC, NON-CHARTER elementary or secondary school full-time."

Owing to concerns about possible multicollinearity, we checked the correlations between the opportunities to learn measures and the measures of perceived CT and US quality. The correlation between ETC OTL and perceived CT quality was .2001, and the correlation between ETC OTL and perceived US quality was .2464. Thus we concluded that these measures were not highly correlated.

Covariates

Table 6 presents descriptive statistics for the ETC, CT, US, and teacher preparation program covariates as well as university fixed effects and school year indicator variables. We used these variables as covariates in our multiple regression analyses. We included these covariates based on prior research on CTs and USs (Boyd et al., 2009; Goldhaber et al., 2020; Ronfeldt et al., 2018). For the CT and US covariates, the covariate female was derived from a categorical gender variable where the CT/US could select female, male, transgender, or other. We constructed binary variables where the CT/US is either female (1) or not female (0) to use in this study. The covariate White was derived from a categorical race variable where the CT/US could select American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or Pacific Islander, White/Caucasian, or other. We constructed binary variables where the CT/US is either White (1) or not White (0) to use in this study.

Table 5
Exploratory Factor Analysis:
Elementary Teaching Candidate Opportunities to Learn in English Language Arts

ETC OTL in ELA	*Factor loading*
Design high cognitive demand ELA tasks for students	0.7746
Teach strategies for learning ELA content (e.g., literature, reading, writing, grammar/vocabulary/word study, speaking, and listening)	0.8764
Differentiate instruction in ELA	0.8935
Connect ELA content to students' prior ELA knowledge	0.8958
Connect ELA content to students' personal/cultural experiences	0.8349
Use analogies and/or examples to develop students' understanding of ELA concepts	0.7940
Facilitate students' use of technology in reading and writing	0.7186
Identify and respond to students' interpretations of ELA texts	0.8598
Facilitate classroom discussion in ELA	0.8809
Manage time and student behavior during ELA	0.8775
Provide students feedback in learning ELA content	0.8862
Eigenvalue	7.88359

Note. Survey items are taken from the 2015–2016 and 2016–2017 Elementary Teaching Candidate Survey. The stem for these items was as follows: "How much opportunity did you have to do each of the following during your student teaching/internship?" Response options included the following: "Observed other teachers use this practice with students"; "Used this practice with students once or twice"; "Used this practice with students three or more times"; "Received feedback on my attempts to use this practice with students"; "None of the above." ELA = English language arts. ETC = elementary teaching candidate. OTL = opportunities to learn.

For the experience as a US (years) variable, the US could have selected "1–3 years" (coded as 1), "4–6 years" (coded as 2), or "more than 6 years" (coded as 3). For the structure of the CT and US variables labeled experience as a public school teacher, see earlier discussion.

For the ETC covariates, the covariate undergraduate GPA (grade point average) is a continuous variable with a mean of 3.561 and a range of 2.89–3.89. The covariate male was derived from a categorical gender variable where the ETC could select female, male, transgender, or other. We constructed a binary variable where the ETC is either male (1) or not male (0) to use in this study. The covariate White was derived from the same categorical race variable used with the CTs and USs. We constructed a binary variable where the ETC is either White (1) or not White (0) to use in this study.

For the teacher preparation program covariates, the variable type indicates the type of preparation program that a given ETC attended. Each ETC selected from five options on the ETC survey that included "4-year bachelor's," "1- to 2-year

Table 6
Descriptive Statistics for Covariates

	Mean	*SD*	*Min.*	*Max.*
Cooperating teacher				
Female	0.954	0.209	0	1
White	0.893	0.309	0	1
Experience as public school teacher (years)	4.928	0.448	1	5
University supervisor				
Female	0.872	0.344	0	1
White	0.780	0.416	0	1
Experience as university supervi@or (years)	1.635	0.775	1	3
Experience as public school teacher (years)	4.467	1.072	1	5
Elementary teaching candidate				
Undergraduate grade point average	3.561	0.265	2.89	3.89
White	0.858	0.350	0	1
Male	0.041	0.198	0	1
Teacher preparation program				
4-year bachelor's	0.188	0.392	0	1
1- to 2-year master's	0.137	0.345	0	1
5-year bachelor's and master's	0.538	0.500	0	1
1- to 2-year postbaccalaureate, no master's	0.061	0.240	0	1
5-year degree, no master's	0.173	0.379	0	1
University fixed effects				
Cardinal	0.137	0.345	0	1
Oriole	0.284	0.452	0	1
Robin	0.203	0.403	0	1
Meadow	0.371	0.484	0	1
Goldfinch	0.005	0.071	0	1
School year indicator variable				
2015–2016	0.411	0.507	0	1
2016–2017	0.589	0.493	0	1

master's," "5-year bachelor's and master's," "1- to 2-year postbaccalaureate, no master's," and "5-year degree, no master's." Five binary variables were constructed from this categorical variable. The binary variables were coded as attended that type of preparation program (1) and did not attend that type of preparation program (0).

The university variables indicate which university a given ETC attended. These are binary variables: attended that university (1) and did not attend that university (0). These five variables were used to construct university fixed effects and were included in all multiple regression models. The school year covariates are binary variables that indicate whether a given ETC completed their preparation program in the 2015–2016 school year or the 2016–2017 school year. These variables were used to create the school indicator variable and were included in all multiple regression models.

Analytic Strategies

Our quantitative research design included a number of multiple regression analyses. Multiple regression is an inferential statistical technique that attempts to predict the association between an outcome variable and a predictor variable while including other observable variables as covariates (Allison, 1998; Gordon, 2015). We added covariates to our multiple regression models to control for potential bias in the association between the predictor and outcome variables. For this study, we employed separate multiple regression models.

Stata was used for all statistical analyses. We used 10 multiple regression models to investigate our hypotheses. Models 1 and 6 examined H_{1A} and H_{2A}, the association between CTs' (USs') reported self-efficacy with regard to teaching ELA and ETCs' perception of CT (US) quality. Models 2 and 7 examined H_{1B} and H_{2B}, the association between CTs' (USs') years of experience teaching in public schools and ETCs' perception of CT (US) quality. Models 3 and 8 examined H_{1C} and H_{2C}, the association between CTs' (USs') reported self-efficacy with regard to teaching ELA and ETCs' opportunities to learn in ELA. Models 4 and 9 examined H_{1D} and H_{2D}, the association between ETCs' perception of CT (US) quality and ETCs' opportunities to learn in ELA. Models 5 and 10 examined H_{1E} and H_{2E}, the association between the interaction of (a) CTs' (USs') reported self-efficacy with regard to teaching ELA and (b) ETCs' perception of CT (US) quality, and candidates' opportunities to learn in ELA.

Tables 7 and 8 present the statistically significant findings from the 10 models. These findings are also presented in narrative form in the "Findings" section. All null findings are presented only in narrative form in the "Findings" section. Each included an outcome variable, a predictor variable, covariates, university fixed effects, and an indicator variable for the elementary candidate's final school year in their preparation program (2015–2016 or 2016–2017). All outcome and predictor variables, except the variable for US years of experience teaching in public schools, were standardized for analysis; in the "Findings" section, we present standardized regression coefficients when appropriate.

Model

Here we present the regression model used for Model 1. The regression models used for Models 2–10 follow a similar structure:

$$\text{ETC perception of CT quality}_i = \beta_{0i} + \beta_1 \text{CT ELA teaching self-efficacy}_i + \text{CT}_i + \text{US}_i + \text{ETC}_i + \text{TPP}_i + \alpha_i + \varpi_i + e_i, \quad (1)$$

where ETC OTL in ELA_i is the latent outcome variable, perception of CT quality, for ETC *i*; β_{0i} is the intercept and mean for the ETC's perception of CT quality; β_1 CT ELA teaching self-efficacy_i represents the latent predictor variable for CT *i*; and the covariates for the CTs, USs, ETCs, and preparation programs are represented by CT_i, US_i, ETC_i, and TPP_i, respectfully; a_i represents the fixed effects for the five universities from which an ETC could have graduated, for ETC *i*; ε_i represents the

Table 7
Multiple Regression Models: Elementary Teaching Candidate Perceptions of University Supervisor Quality and Predictor Variables

	Coefficient (SE)	
	Model 3	*Model 4*
Predictor variable		
US self-efficacy in ELA	0.179* (0.083)	–
US experience as public school teacher (years)	–	0.166* (0.083)
Covariate		
CT: Female	0.019 (0.330)	−0.092 (0.339)
CT: White	−0.306 (0.216)	−0.357 (0.214)
CT: Experience as public school teacher (years)	−0.110 (0.102)	−0.122 (0.101)
US: Female	−0.078 (0.250)	0.061 (0.250)
US: White	0.010 (0.193)	0.007 (0.199)
US: Experience as US (years)	−0.207 (0.097)	−0.184 (0.094)
US: Experience as public school teacher (years)	0.188 (0.080)	–
ETC: Undergraduate grade point average	−0.485 (0.278)	−0.436 (0.281)
ETC: White	−0.467 (0.168)	−0.498 (0.176)
ETC: Male	−0.711 (0.356)	−0.685 (0.383)
TPP: 4-year bachelor's	−0.048 (0.258)	−0.021 (0.260)
TPP: 1- to 2-year master's	−0.173 (0.328)	−0.152 (0.332)
TPP: 5-year bachelor's and master's	0.507 (0.283)	0.550 (0.284)
TPP: 1- to 2-year postbaccalaureate, no master's	0.344 (0.322)	0.318 (0.329)
TPP: 5-year degree, no master's	0.540 (0.290)	0.583 (0.301)
Constant	3.464 (1.349)	3.597 (1.356)
R2	0.2310	0.2035
N	192	192

Note. A dash indicates that a variable was not used in a specific model. CT = cooperating teacher. ELA = English language arts. ETC = elementary teaching candidate. TPP = teacher preparation program. US = university supervisor.
*p < .05. **p < .01. ***p < .001.

Table 8

Multiple Regression Models: Elementary Teaching Candidate Opportunities to Learn in English Language Arts and Predictor Variables

	Coefficient (SE)			
	Model 5	*Model 6*	*Model 7*	*Model 9*
Predictor variable				
CT self-efficacy in ELA	−0.151* (0.075)	–	–	–
ETC perceived CT quality in ELA	–	0.218* (0.087)	–	–
CT Self-Efficacy × ETC Perceived CT Quality	–	–	0.188** (0.070)	–
ETC perceived US quality in ELA				0.227* (0.103)
Covariate				
CT self-efficacy n ELA	–	–	−0.271 (0.072)	–
ETC perceived CT quality in ELA	–	–	0.456 (0.129)	–
CT: Female	0.014 (0.370)	−0.142 (0.397)	−0.049 (0.390)	−0.019 (0.384)
CT: White	0.115 (0.207)	0.130 (0.198)	0.167 (0.191)	0.182 (0.197)
CT: Experience as public school teacher (years)	0.332 (0.224)	0.374 (0.230)	0.398 (0.226)	0.379 (0.212)
US: Female	0.072 (0.265)	0.005 (0.250)	−0.029 (0.245)	0.026 (0.243)
US: White	0.187 (0.181)	0.060 (0.172)	0.130 (0.162)	0.157 (0.187)
US: Experience as US (years)	−0.095 (0.097)	−0.087 (0.094)	−0.091 (0.092)	−0.053 (0.097)
US: Experience as public school teacher (years)	0.005 (0.064)	−0.006 (0.064)	0.008 (0.065)	−0.037 (0.073)
ETC: Undergraduate grade point average	0.123 (0.295)	0.174 (0.295)	0.164 (0.290)	0.255 (0.293)
ETC: White	0.088 (0.199)	0.168 (0.207)	0.191 (0.210)	0.183 (0.201)
ETC: Male	−0.727 (0.401)	−0.716 (0.365)	−0.661 (0.386)	−0.553 (0.435)
TPP: 4-year bachelor's	−0.132 (0.268)	−0.040 (0.253)	−0.041 (0.255)	−0.155 (0.243)
TPP: 1- to 2-year master's	0.306 (0.437)	0.282 (0.420)	0.284 (0.408)	0.329 (0.409)
TPP: 5-year bachelor's and master's	0.455 (0.417)	0.500 (0.400)	0.499 (0.393)	0.335 (0.392)
TPP: 1- to 2-year postbaccalaureate, no master's	0.350 (0.274)	0.324 (0.261)	0.400 (0.246)	0.265 (0.273)
TPP: 5-year degree, no master's	0.535 (0.328)	0.495 (0.322)	0.673 (0.302)	0.313 (0.314)
Constant	−2.055 (1.577)	−2.599 (1.583)	−2.929 (1.596)	−3.029 (1.542)
R2	0.1686	0.1901	0.2394	0.1914
N	192	192	192	192

Note. A dash indicates that a variable was not used in a specific model. CT = cooperating teacher. ELA = English language arts. ETC = elementary teaching candidate. TPP = teacher preparation program. US = university supervisor. *p < .05. **p < .01. ***p < .001.

indicator variable for whether an ETC completed their preparation program in 2015–2016 or 2016–2017, for ETC *i*; and e_i represents the standard error for ETC *i*.

Limitations

There were a few limitations in this study. First, we used ETCs' self-reports to calculate our measures of opportunities to learn in ELA. In other work (Cavanna et al., 2021), we utilized interview data from program directors and methods instructors at four of the universities in our study to provide additional support for our measures of candidates' ELA learning opportunities. Second, ETCs, CTs, and USs who were part of this study were a volunteer sample; they may have differed from other ETCs, CTs, and USs from the five participating programs. Third, our results may have been affected by omitted variable bias; that is, factors that we did not measure may account for some of the variation in ETCs' ELA learning opportunities.

Findings

This study investigated 10 hypotheses through 10 multiple regression models. Table 6 presents the descriptive statistics for the covariates used in the models, whereas Tables 7 and 8 present the multiple regression coefficients for the statistically significant findings. In summary, we found that USs' ELA teaching self-efficacy was positively associated with perceived quality and years of teaching experience. In addition, elementary candidates were more likely to report opportunities to learn, try out, and receive feedback on ELA instruction when they perceived their supervisors as high quality. Furthermore, when CTs reported having a high level of self-efficacy with regard to teaching ELA and were perceived as being high quality, their candidates reported having greater opportunities to learn, try out, and receive feedback on ELA instruction.

Teacher Educators' ELA Teaching Self-Efficacy and Years of Teaching Experience

Models 1 and 2, which explored H_{1A} and H_{1B}, respectively, produced nonstatistically significant results. In particular, the analysis in Model 1 indicated no significant association between CTs' reported ELA teaching self-efficacy and ETCs' perceived CT quality, and the analysis in Model 2 indicated no significant association between CTs' experience as a public school teacher and ETCs' perceived CT quality. As a result, neither H_{1A} nor H_{1B} was confirmed.

Model 3 (Table 7) investigated the association between USs' reported ELA teaching self-efficacy and ETCs' perception of US quality (H_{2A}). In contrast to Model 1, this analysis found a statistically significant and positive association between the two variables at the $p = .033$ alpha level. This finding indicates that with a 1 standard deviation increase in a US's reported ELA teaching self-efficacy,

the candidate's perception of US quality increased by .179 standard deviations. As a result, H_{2A} was confirmed.

Model 4 (Table 7) explored the association between USs' experience as public school teachers and ETCs' perception of US quality (H_{2B}). In contrast to Model 2, this analysis found a statistically significant and positive association between the two variables at the $p = .046$ alpha level. This finding indicates that with a 1 standard deviation increase in a US's public school teaching experience, the candidate's perception of US quality increased by .179 standard deviations. As a result, H_{2B} was confirmed.

Model 5 (Table 8) investigated the association between CTs' reported self-efficacy with regard to teaching ELA and ETCs' reported opportunities to learn in ELA (H_{1C}). This analysis found a statistically significant and negative association between the two variables at the $p = .046$ alpha level. This finding indicates that with a 1 standard deviation increase in a CT's reported ELA teaching self-efficacy, the ETC's opportunities to learn decreased by .151 standard deviations. As a result, H_{1C} was not confirmed.

Model 8, which explored H_{2C}, produced nonstatistically significant results; as a result, H_{2C} was not confirmed. In particular, in contrast to Model 5, the analysis in Model 8 indicated no significant association between USs' ELA teaching self-efficacy and ETCs' opportunities to learn in ELA.

Perceived Cooperating Teacher Quality

Model 6 (Table 8) investigated the association between ETCs' perception of their CTs' quality (as CTs) and ETCs' reported opportunities to learn in ELA (H_{1D}). This analysis found a statistically significant and positive association between the two variables at the $p = .013$ alpha level. This finding indicates that with a 1 standard deviation increase in a candidate's perception of their CT's quality, the candidate's opportunities to learn increased by .218 standard deviations. As a result, H_{1D} was confirmed.

The statistically significant negative association for Model 5 and the statistically significant positive association for Model 6 prompted a deeper investigation into the role that these variables, CTs' reported ELA teaching self-efficacy and ETCs' perception of CT quality, played in candidates' opportunities to learn. As a result, we examined H1E. Model 7 (Table 8) explored H_{1E} by calculating an interaction term for the interaction between the two variables and including this interaction variable as the independent variable in the multiple regression analysis. This analysis found a statistically significant and positive association between the interaction variable and ETCs' opportunities to learn in ELA at the $p = .008$ alpha level. This finding indicates that with a 1 standard deviation increase in the interaction variable, the candidate's opportunities to learn increased by .188 standard deviations. This finding suggests that even though a CT's reported ELA teaching self-efficacy is negatively

associated with an ETC's opportunities to learn in ELA, if the CT reports strong ELA teaching self-efficacy and the ETC perceives the CT as high quality, then the candidate is likely to report having more opportunities to learn in ELA. As a result, H_{1E} was confirmed.

Perceived University Supervisor Quality

Model 9 (Table 8) explored H_{2D} by investigating the association between ETCs' perceptions of US quality and candidates' opportunities to learn in ELA. Similar to Model 6, this analysis found a statistically significant and positive association between the two variables at the $p = .030$ alpha level. The finding indicates that with a 1 standard deviation increase in a candidate's perception of their US's quality, the candidate's opportunities to learn increased by .227 standard deviations. As a result, H_{2D} was confirmed.

Model 10, which explored H_{2E}, produced nonstatistically significant results, and as a result, H_{2E} was not confirmed. In particular, in contrast to Model 7, the analysis in Model 10 indicated no significant association between the interaction variable (US's ELA Teaching Self-Efficacy × Candidate Perception of US Quality) and ETCs' opportunities to learn in ELA.

Discussion

Perceived University Supervisor Quality

This study found that ETCs' perceptions of US quality increased when USs reported higher levels of ELA teaching self-efficacy and when USs had relatively more public school teaching experience. This finding indicates that preparation programs should carefully select USs to ensure that they have sufficient teaching experience and positive beliefs about their own ability to enact ELA instruction (Cantrell & Hughes, 2008; Woolfolk Hoy & Davis, 2006). We also report that candidates' perceptions of US quality in ELA are positively associated with candidates' opportunities to learn in ELA. The measure of perceived US quality used in this study suggests that USs who were viewed as high quality contributed to candidates' ELA learning opportunities in a few different ways.

First, ETCs perceived their USs as high quality if they observed them on a regular basis and if the USs provided valuable feedback on their instruction (Boyd et al., 2009). Second, USs' availability to address ETCs' questions and concerns about teaching was strongly associated with whether they were viewed as high quality by elementary candidates. Third, candidates viewed USs as high quality if they contributed to teacher education program coherence, that is, if they held similar ideas about instruction as candidates' CTs and if they provided feedback that was aligned with the practices emphasized in methods courses (Feiman-Nemser et al., 2014; Kennedy, 1998). These results suggest that preparation programs should set

expectations that USs observe and provide feedback to candidates frequently and make themselves available to respond to candidates' questions and concerns. In addition, programs should ensure that USs communicate messages about effective teaching to candidates that are consistent with those shared in methods courses and by CTs.

Cooperating Teacher English Language Arts Teaching Self-Efficacy and Perceived Cooperating Teacher Quality

In this study, we found that CTs' ELA teaching self-efficacy had a negative association with ETCs' opportunities to learn, try out, and receive feedback on ELA instructional strategies. We interpreted this finding to mean that, in general, CTs with higher levels of self-efficacy have high expectations for how ELA should be taught and, as a result, may provide candidates with fewer practice opportunities than other CTs. In addition, we reported that candidates' perceptions of CT quality in ELA were positively associated with candidates' opportunities to learn, try out, and receive feedback on ELA teaching strategies (Ronfeldt & Reininger, 2012). The measures of perceived CT quality used in this study suggest that CTs who were viewed as high quality contributed to candidates' ELA learning opportunities in a few different ways.

First, elementary candidates perceived their CTs as high quality if they viewed them as excellent teachers and worthy role models; this indicates that candidates had opportunities to learn about specific ELA teaching strategies (such as strategies for learning ELA content, differentiating instruction, and facilitating discussion) when such strategies were modeled effectively by their CTs (Ronfeldt et al., 2018). Second, CTs' ability and willingness to provide feedback and support strongly affected whether they were viewed as high quality by elementary candidates. In particular, candidates perceived CTs as high quality (and, thus, the candidates experienced more opportunities to learn ELA) when CTs were frequently in the classroom when candidates taught lessons, participated in productive meetings with candidates, and provided candidates with useful feedback on their teaching (Ronfeldt & Reininger, 2012). Third, candidates viewed CTs as high quality if they contributed to teacher education program coherence by demonstrating knowledge about candidates' preparation programs and permitting them to try out instructional strategies emphasized by their programs.

These findings about CTs are consistent with research on instructional coaching that has pointed to the importance of coaches modeling effective ELA instruction and providing useful feedback to teachers about their own ELA instruction (Kraft et al., 2018; Matsumura et al., 2012) as well as research on the key role of teacher education program coherence in supporting candidates' development of instructional practices emphasized in their methods courses (Feiman-Nemser et al., 2014; Kennedy, 1998). These results suggest that teacher preparation programs should (a) carefully

select experienced educators to serve as CTs who themselves are excellent ELA teachers (Boyd et al., 2009), (b) set expectations that they regularly observe and meet with candidates, (c) train them to provide useful feedback to candidates on their instruction, and (d) ensure that CTs' approaches to supporting candidates are well aligned with methods courses and other aspects of the programs (Feiman-Nemser et al., 2014; Kennedy, 1998).

In this study, we also found that when an ETC perceived their CT to be of high quality *and* the CT reported strong self-efficacy with regard to teaching ELA, the candidate reported more opportunities to learn in ELA. We interpret this finding to mean that when candidates did not view their CTs as being worthy role models, providing feedback, or aligned with other parts of their teacher education programs, high levels of CT ELA teaching self-efficacy led to fewer opportunities to learn for candidates. Conversely, when candidates perceived their CTs as being excellent teachers, sources of feedback on candidates' instruction, and integrated with other parts of their preparation programs, high CT ELA self-efficacy led to ample candidate learning opportunities in ELA. This finding also suggests that preparation programs should carefully select CTs to ensure not only that they have high levels of ELA teaching self-efficacy but that they are also very strong ELA teachers, that their practices are well aligned with those promoted in methods courses and other parts of the programs, and that they are able and willing to provide useful feedback to candidates on their teaching (Feiman-Nemser et al., 2014; Kennedy, 1998).

Notes

[1] A pseudonym.

[2] Pseudonyms.

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