



**SMILE (Shared Mentoring
in Instructional Learning Environments)
Effectiveness of a Lesson-Study Approach
to Student-Teaching Supervision
on a Teacher-Education Performance Assessment**

**Estella Williams Chizhik, Alexander Williams Chizhik,
Catherine Close, & Margaret Gallego**

Student-teaching field placements play an important role in preparing teacher candidates, many of whom rate the practice as the most authentic and relevant learning experience associated with their teacher-education programs (Koerner, Rust, & Baumgartner, 2002). As a part of these field experiences, teacher candidates have opportunities to learn instructional and class management strategies from mentor teachers. These placements also provide opportunities for teacher candidates to connect methodological and theoretical content taught at the university with actual practices at K–12 public schools. But what effects do field placements have on teacher performance? Research in this area has mainly focused on logistics, such as selection of student-teaching experiences (LaBoskey & Richter, 2002), estab-

Estella Williams Chizhik is an associate professor, Alexander Williams Chizhik is a professor, Catherine Close is an adjunct professor, and Margaret Gallego is a professor, all with the School of Teacher Education in the College of Education at San Diego State University, San Diego, California. Email addresses: chizhik@mail.sdsu.edu, achizhik@mail.sdsu.edu, czclose550@gmail.com, & mgallego@mail.sdsu.edu

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lishing clear roles for guide teachers and supervisors (Koerner et al., 2002), and providing time for teacher candidates in the classroom (Chambers & Hardy, 2005; Spooner, Flowers, & Algozzine, 2008). Research has also addressed concerns about attitudes, including self-efficacy of classroom management (Chambers & Hardy, 2005). Svengalis (1992) identified a series of unsystematic practices surrounding student teaching and university supervision of teacher candidates, suggesting that all aspects of the student-teaching experience are “often a patchwork, at best, with many of the essential components seemingly left to chance” (p. 31). As a resounding echo, Brouwer and Korthagen (2005) wrote that “relatively little is known about the degree to which specific arrangements and strategies in teacher education can counterbalance prospective teachers’ socialization into established practice in schools” (p. 154). More specifically, research on student teaching has seldom focused on its effect on teaching performance. Therefore, to help build a research base in the field of student-teacher development, this study examines how a lesson-study approach to student-teaching supervision, Shared Mentoring in Instructional Learning Environments (SMILE), affects teacher candidates’ achievement on the edTPA, a performance-based assessment for teachers.

Models of Supervising Student Teaching

The typical model for student-teaching field placement involves three key participants. A teacher candidate develops his or her instructional skills while working in a public school classroom. A mentor teacher opens his or her classroom to the teacher candidate and, in so doing, provides guidance and lends expertise to the teacher candidate. The third participant is a university supervisor who visits the field placement classroom to observe the teacher candidate’s instructional lessons. The university supervisor typically monitors and evaluates the development of teacher candidates’ instructional skills.

Pajak (1993, 2000) described five approaches to university supervision of teacher candidates: (a) original clinical, (b) artistic, (c) developmental, (d) technical/didactic, and (e) reflective. The original clinical model sends the university supervisor to observe and meet with the teacher candidate on several separate occasions during a semester. The meetings include planning, observation, and reflection of the implemented lesson. The artistic model encourages the university supervisor to be another pair of eyes in the classroom. The university supervisor takes notes on interactions and behaviors that the teacher candidate did not notice. The university supervisor offers advice and strategies that would solve classroom challenges for the teacher candidate. The developmental model promotes a gradual acquisition of responsibility for teacher candidates. The university supervisor encourages the teacher candidate to observe more at the beginning of the field placement. Over time, the teacher candidate assumes greater responsibility under the guidance of both the university supervisor and mentor teacher. The technical/didactic model encourages

the university supervisor to use a variety of data to monitor and mentor the teacher candidate. The university supervisor takes observational notes, refers to teacher candidates' reflection logs, and completes evaluation surveys. These data form the basis of postobservational discussion. The university supervisor, serving as primary expert, provides feedback on how the student teacher implemented instructional skills. Finally, the reflection model attempts to support teacher candidates' ability to be self-reflective and self-evaluative of their own skills. The university supervisor serves as a guide in supporting teacher candidates' self-monitoring processes.

Each model attempts to structure the relationship and interaction between the university supervisor and the teacher candidate without consideration of mentor teachers. While teacher candidates work daily with their mentor teachers, these five models place the responsibility on the university supervisor for student-teacher development and, with that, develop a potential for a number of challenges. The primary challenge is establishing a shared understanding between university supervisor and mentor teacher in regard to developing teacher candidates' instructional skills. A number of research studies have reported how university supervisors and mentor teachers miscommunicate or have differing perspectives about classroom instruction as well as the mentor teacher's role (Ajayi & Lee, 2005; Clark, 2002; Cuenca, Schmeichel, Butler, Dinkelman, & Nichols, 2011; Gimbert & Nolan, 2003; Svengalis, 1992; Zeichner, 2002). Clarke, Triggs, and Nielsen (2014) reviewed research to identify 11 modes of mentor-teacher participation, from "gatekeepers of the profession" and "teachers of children" to "supporters of reflection" and "abiders of change" (p. 163). Universities rarely engage in supporting development of particular mentor-teacher identities. In addition, university supervisors and mentor teachers often send contradictory information to teacher candidates (Ajayi & Lee, 2005). Unsurprisingly, teacher candidates feel conflict when their university supervisor and mentor teacher have differing opinions about classroom instruction (Johnson & Napper-Owen, 2011). Therefore, the strength of the supervision model depends on the strength of this triad community. Given the importance of community, we turn to a theoretical framework that can explain how community processes can support teacher candidates' building repertoires of pedagogical skills.

Theoretical Framework

Using Rogoff's (1990, 2014) notion about apprenticeship in communities of practice, teacher candidates have an opportunity to learn repertoires of practice (Berrill & Addison, 2010; Gutiérrez & Rogoff, 2003) by working actively and engaging in desirable authentic experiences with their mentor teachers and university supervisors. Rogoff (1990) argued that effective development is dependent on the environment and the culture of experiences. In that environment, learners' participation involves focused observation of how repertoires of practice are used in authentic settings as well as active and meaningful engagement in their community

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of practice or, as Rogoff (2014) called it, “learning by observation and pitching in” (p. 69). There are seven defining features of Rogoff’s framework (see Figure 1): (a) community organization of learning, (b) motive, (c) social organization of endeavors, (d) goal of learning, (e) learning is by means of wide attention and contribution, (f) communication is based on coordination through shared reference, and (g) assessment of developing skills.

Rogoff’s theory has been most recently applied to the study of culturally relevant contexts, such as learning processes of Mexican children (Alcalá, Rogoff, Mejía-Arauz, Coppens, & Dexter, 2014; Coppens, Alcalá, Mejía-Arauz, & Rogoff, 2014), classroom management in bilingual classes (Paradise, Mejía-Arauz, Silva, Dexter, & Rogoff, 2014), mentoring program for college students (Frahm et al., 2013), and motivation of young athletes (Rogoff, 2011). The apprenticeship model is ripe with opportunities for applications to the field of teacher education in general and student

Figure 1
Features of Rogoff’s (2014) Learning by Observation and Pitching in



teaching in particular. The theory can contribute to the research on student teaching in three distinct areas. First, apprenticeship in thinking focuses on the learning environment (Rogoff, 1990, 2014). For our purposes, the learning environment includes not only classrooms in which teacher candidates are developing their pedagogical skills but the environment of reflection where teacher candidates learn how to think about their students and pedagogy. That is, teacher candidates have the opportunity to reflect about their teaching within a community of practice. Second, the theory brings forth the importance of community: how and with whom each teacher candidate collaborates. In traditional models of student teaching, teacher candidates are mentored by in-service teachers, but engaging with a community of learners who are developing their pedagogical skills is not a requirement. Third, Rogoff's theory highlights the importance of shared understanding within communities of practice where members must work together to build a common understanding and, as a result, a shared set of pedagogical practices. In traditional models, a challenge that teacher candidates often face is miscommunication between university supervisors and mentor teachers. Rogoff's apprenticeship model suggests, in application, that the student-teaching experience must pay careful attention to building communities that engage all members in productive negotiation of meanings associated with their practice. We believe that a new design of student-teaching supervision must address these three key features of Rogoff's apprenticeship model. The promise of such an opportunity, we believe, comes in the form of lesson study.

Lesson Study

To overcome the mentioned limitations to university supervisors' supporting the development of teacher candidates, we propose to incorporate Japanese lesson study, the *jugyou kenkyuu* (Fernandez & Chokshi, 2002; Lewis, 2002; Stigler & Hiebert, 1999) approach, within a new supervision model. An important aspect of the lesson-study approach is building of professional learning communities (PLCs) among classroom teachers. In these PLCs, teacher candidates engage in an iterative process to develop their instructional skills. They begin by observing their mentor teachers' lessons, planning with them, and receiving feedback about their instruction. In many ways, these steps are supported by Rogoff's (2014) learning by observation and pitching in (see Figure 1).

The lesson-study process has been used in the United States in different contexts (e.g., Carrier, 2011; Nelson, Deuel, Slavit, & Kennedy, 2010; Stewart & Brendefur, 2005) and with varying degrees of success. In each case, classroom teachers formed PLCs to develop and support each other's instructional practice through a process of planning, observation, and feedback. Lesson study has been shown to deepen teachers' thinking about learning and instruction (Pang & Ling, 2012; Rock & Wilson, 2005), facilitate meaningful professional collaboration (Cohan & Honigsfeld, 2006; Rock & Wilson, 2005), support positive reforms at the district

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level (Stewart & Brendefur, 2005), promote teacher efficacy (Chong & Kong, 2012; Rock & Wilson, 2005) along with a growth mind-set (Dweck, 2006), and improve students' achievement (Barrett, Riggs, & Ray, 2013). In each study, the opportunity for teachers to engage in and shape cultural practices of communities may have contributed to lesson-study success. Lesson study also has some challenges. Among them are teachers' conception of the time it takes to collaborate with others, the need for teachers to have greater content knowledge than teachers already possess, and the belief that teachers are reluctant to be critically evaluated by their peers (Chokshi & Fernandez, 2004). These challenges reflect the variation within cultural communities of practices. The apprenticeship model of learning suggests that the environment, the community, and the discourse within the community play an important role in lesson-study processes and, therefore, outcomes.

Does Lesson-Study Support Development of Teacher Candidates?

Lesson study is just beginning to be used in support of developing teacher candidates. Cohan and Honigsfeld (2006) had teacher candidates work with each other to identify themes for instruction, implement their lessons, and reflect on outcomes with their peers. In that qualitative study, researchers found that participants enjoyed the collaborative process, which allowed them to develop more effective lessons and professional dispositions.

Carrier (2011) implemented the lesson-study approach with teacher candidates in a science methods course. Using video observations and field notes of students' collaborations, Carrier concluded that "the collaborative planning process promoted an expansion of ideas" (p. 152). Marble (2007) incorporated lesson study in a science methods course. In this research, students worked collaboratively to design, teach, and revise three separate lessons before their student-teaching practicum. Findings indicate that teacher candidates develop better skills at lesson design, delivery, and using assessment data to inform practice.

Chassels and Melville (2009) implemented lesson-study groups with teacher candidates within their mathematics methods course. This study noted challenges and benefits. The challenges included logistics, such as teacher candidates' frustration with scheduling time to meet with each other. Incongruent instructional contents and styles made collaboration a challenge. Yet, teacher candidates also claimed that lesson study afforded them the opportunity to focus on students' needs, develop a deeper understanding of the curriculum, and attain greater confidence in their teaching.

Parks (2009) wrote about implementation of lesson study in an action research course where teacher candidates were encouraged to work collaboratively in designing writing activities. Unlike other studies, Parks found lesson study to have an ambiguous effect on teacher candidates' conceptions of instruction. Using qualitative methods, Parks wrote about different outcomes for two collaborative groups. In both collaborative groups, teacher candidates' conceptions of writing and students'

thinking failed to improve. Parks speculated that the lack of improvement was due to the instructor's inability to facilitate teacher candidates' thinking. He attributed this shortcoming to teacher candidates' perceiving the instructor as the outsider; someone who does not share their experiences in the classroom. Moreover, he suggested that teacher candidates develop shared thinking that can exclude even reasonable insights and innovations. As a result, Parks posited that future research should not only examine the effects of lesson study but describe the kinds of collaboration that facilitate teacher candidates' instructional skill development and understanding.

The promise of lesson study in student-teaching supervision can be seen through the lens of Rogoff's (1990, 2014) apprenticeship theory. A lesson-study approach to supervision of student teaching creates a community of practice that involves teacher candidates, mentor teachers, and university supervisors. Together, they solve authentic classroom-based problems. Successful communities carefully build shared understanding among all participants. As Parks (2009) noted, the nature of the collaboration within a lesson-study community should be carefully considered.

Our Program of SMILE

Teacher preparation programs that implemented lesson studies did so mostly within teacher candidates' methods courses. We, however, decided to embed the lesson-study approach entirely within the student-teaching practicum. In doing so, we reenvisioned student-teaching supervision as an inquiry-based and instructional approach, as opposed to our previous, traditional evaluatory model. In addition, we wanted collaboration not only to be among teacher candidates but to include mentor teachers and university supervisors. Thus SMILE established PLCs with two to three teacher candidates who are working at one site with students of similar ages (elementary schools), their mentor teachers, and a university supervisor, to whom we refer as a university liaison (see Figure 2).

These PLCs engage in the lesson-study process of planning, instruction, and reflection. The goal is to build teacher candidates' repertoire of practice as well as underlying thought processes. We posit that having university liaisons work with mentor teachers to build shared understanding about instruction, learning, and students' needs supports teacher candidates' instructional development better than the traditional model of student-teacher supervision. Specifically, the goal of SMILE is to (a) build a culture of critical reflection within authentic classroom experiences, (b) build a community of collaboration and learning, and (c) build repertoires of practice through shared mentoring. To foster a lesson-study approach that builds teacher candidates' repertoire of practice, each PLC underwent two rotations during the fall semester and one rotation during the spring semester (see Table 1).

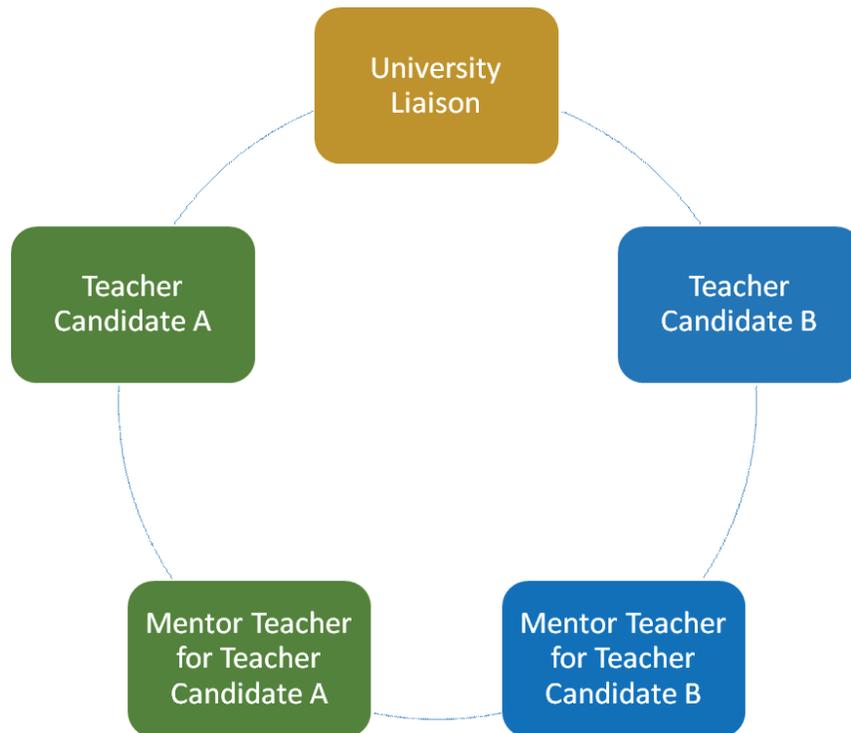
Each rotation focused on a specific set of student-teaching skills. The first rotation focused on classroom management. The second rotation focused on lesson planning and instruction. The third rotation (spring semester) focused on using

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assessment data to inform next instructional steps. Each rotation included a set of guiding questions (see the Appendix).

Each rotation consisted of a planning meeting where the PLC met to discuss each teacher candidate's plan for the upcoming lesson or learning segment. Prior to the planning PLC meeting, each teacher candidate sent each member of the PLC a lesson plan or learning segment to discuss. Teacher candidates used that feedback to revise the lesson plans, which they implemented and video recorded. The PLCs met for a second time to review the video recordings and focus on specific instructional skills that were the focus of that rotation, providing recommendations for changes as needed. Teacher candidates, then, used the feedback to plan another lesson that the university liaison observed and video recorded. After the second lesson, the university liaison and teacher candidate debriefed the lesson with a focus on what skills were developed during the SMILE rotation and takeaways for the teacher candidate. After the rotation, each teacher candidate wrote a reflection on what he or she learned from the experience.

Figure 2
Members of the SMILE Grade-Level Professional Learning Community



Research Question

We believe that a collaborative approach to student-teaching supervision will have a benefit on teacher candidates' development of necessary instructional skills. Research on the effect of student teaching on codified instructional skills is few and far between. With the advent of national standardized performance-based assessments within teacher-education programs, the opportunity to measure the effectiveness of various models of student teaching is now possible. As a result, our research investigates the effectiveness of the SMILE approach to student-teaching supervision on teacher candidates' performance on the edTPA. Our research question asks whether teacher candidates in the SMILE student-teaching supervision model perform better on the edTPA than a similar group of teacher candidates in a traditional model of supervision.

Methods

Participants

Sixty teacher candidates participated in this research over the course of an academic school year. These participants were enrolled in a fifth-year multiple-subjects (elementary school) credential program at a large public university in

Table 1
Detailing the Structure of the SMILE Program

	<i>SMILE supervision</i>	<i>Traditional supervision</i>
Contact hours	12 per academic year (4 per rotation)	10–14 per academic year
Observation/ meeting schedule	Each of 3 rotations include the following: 1. Teacher candidate sends lesson plan to PLC. 2. PLC convenes for planning meeting to discuss lesson plan (Friday). 3. Teacher candidate teaches and video records lesson (Monday). 4. PLC convenes for video debriefing meeting (Tuesday or Wednesday). 5. University liaison observes and debriefs with teacher candidate (Thursday or Friday). 6. Teacher candidate writes a reflection about lessons learned during the rotation.	Each of 6–10 observations include the following: 1. Teacher candidate sends lesson plan to university supervisor. 2. University supervisor observes and debriefs with teacher candidate. At the middle and end of each semester, university supervisor meets with teacher candidate and his or her mentor teacher to discuss and sign a formal evaluation.

Note. PLC = professional learning community.

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southwest United States. All participants had earned a bachelor's degree prior to enrolling in the credential program and met all the enrollment requirements for the program, including passing California Basic Educational Skills Test (CBEST) and California Subject Examination for Teachers exams as well as conducting 30 hours of field experience with children. Thirty participants were assigned to the SMILE version of university supervision, and the other 30 participants were assigned to a traditional model of supervision. The two groups did not differ statistically significantly on their CBEST achievement nor in undergraduate grade point average (GPA) and GPA within the credential program. SMILE participants included one man, with the rest women; traditional-supervision participants included three men, with the rest women. The curriculum (course) content and sequencing for both cohorts were identical. Moreover, two instructors, both of whom served as SMILE liaisons, taught courses for both cohorts. Mentor teachers for both cohorts were teachers with at least 5 years of elementary-school teaching experience, had served as mentor teachers in the past, and were approved by their principals and a university faculty member to continue serving as mentor teachers. Each participant had a unique mentor teacher. Placement schools for student teaching within the SMILE cohort were different from the comparison cohort. All participants remained with the study for the duration of the academic year.

Procedure and Data Source

Supervision models. Thirty participants (teacher candidates) in the SMILE cohort were assigned to a mentor teacher in one of eight elementary schools. At least two teacher candidates were assigned to any one school, such that each teacher candidate had a colleague who was working with another mentor teacher in a similar grade level. SMILE PLCs included a university liaison and two or three teacher candidates along with their mentor teachers, who taught similar grades at the same school site. The PLCs participated in three rotations during the school year, as described earlier.

The comparison group included 30 participants (teacher candidates), each of whom experienced the traditional model of supervision by being assigned to a mentor teacher without SMILE PLCs at school sites. A university supervisor observed three lessons per semester and privately debriefed with the teacher candidate after each lesson. Supervisors only interacted briefly with mentor teachers.

University supervisors. Four university liaisons (the authors of this study) worked with the 30 teacher candidates in the SMILE program. Each SMILE university liaison worked with PLCs at two elementary schools. Two of the authors supervised two teacher candidates (one per supervisor) from the traditional-supervision model cohort (comparison group). An additional four university supervisors implemented the traditional model of supervision with that cohort.

edTPA. Each teacher candidate completed the edTPA, a performance-based assessment required to complete and pass before earning a teaching credential in California. The edTPA consists of three parts: planning for instruction and assessment, instruction, and assessment. In the planning for instruction and assessment section, teacher candidates submit a plan of an instructional unit that consists of three to five lesson plans along with assessments and a commentary explaining the planning decisions. For the instruction section of the edTPA, teacher candidates submit 20 minutes of video that were recorded during the instructional unit along with a commentary explaining instructional decisions. For the assessment section, teacher candidates submit a quantitative analysis of assessment data that includes samples of students' work and a commentary addressing what the data mean regarding the instruction's quality, what could have been done differently during the instructional unit, and what should be done next for the students. The edTPA includes 15 scores, 5 subscores for each of the 3 parts (see Table 1). Each subscore is determined by trained Pearson Education scorers according to a 5-point rubric. Pearson Education has validated each subscore of the assessment (Stanford Center for Assessment, Learning, and Equity, 2013). A score of 5 indicates highest proficiency.

Focus group interviews. Upon completion and submission of edTPAs, all participants were interviewed in focus groups. Four graduate students and one university faculty member conducted the interviews; all interviewers had teaching experience and general understanding about student-teaching supervision and the SMILE program. None of the interviewers worked with participants as instructors or supervisors.

Teacher candidates in the SMILE cohort were divided into four focus groups; members of each PLC were in different focus groups, and at least four schools were represented in each focus group. Teacher candidates in the comparison cohort were randomly divided into seven focus groups. The difference in number of focus groups was due to the number of interviewers available during the dates selected to conduct the focus groups.

Each focus group was asked five semistructured questions: (a) How did the student-teaching supervision support your development as a teacher? (b) How have your instructional skills changed over the year? (c) What are the reasons for those changes? (d) How did the university liaison collaborate with the classroom teacher? and (e) How could this interaction with guide teacher and liaison be improved? All focus group interviews were audio-recorded and, subsequently, transcribed.

Analyses and Results

Quantitative

To compare teacher candidates who participated in the SMILE program with teacher candidates who were supervised under the traditional program (comparison

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group), we first conducted a MANOVA with each of the 15 subsections serving as dependent variables. Conducting multiple t-tests risks detecting random statistically significant differences by chance. The MANOVA detected a statistically significant difference for at least one variable, $F(15, 44) = 4.21, p < .05$.

Based on the MANOVA results, we conducted associated ANOVA tests for each of the subsections (see Table 2). The ANOVAs detected statistically significant differences for subsections of “Planning to Support Varied Student Learning Needs,” $F(2, 60) = 4.30, p < .05$, and “Analysis of Student Learning,” $F(2, 60) =$

Table 2
MANOVA and Associated ANOVAs for edTPA Planning, Instruction, and Assessment

<i>edTPA subsection</i>	Supervision model			
	<i>SMILE</i>	<i>Traditional</i>	<i>F</i>	<i>df</i>
Planning for Instruction and Assessment ANOVA	3.36 (0.47)	3.24 (0.38)	1.47	1
1. Planning for Literacy Learning	3.23 (0.68)	3.28 (0.45)	0.11	1
2. Planning to Support Varied Student Learning Needs	3.62 (0.76)	3.23 (0.67)	4.30*	1
3. Using Knowledge of Students to Inform Teaching	3.40 (0.56)	3.20 (0.47)	2.25	1
4. Identifying and Supporting Language Demands	3.27 (0.58)	3.28 (0.60)	0.01	1
5. Planning Assessments to Monitor and Support Student Learning	3.27 (0.54)	3.20 (0.45)	0.27	1
Instruction and Engaging Students in Learning ANOVA	3.21 (0.37)	3.12 (0.26)	0.25	1
6. Learning Environment	3.20 (0.48)	3.10 (0.38)	0.79	1
7. Engaging Students in Learning	3.12 (0.49)	3.05 (0.30)	0.41	1
8. Deepening Student Learning	3.32 (0.53)	3.23 (0.50)	0.39	1
9. Subject-Specific Pedagogy	3.32 (0.59)	3.27 (0.49)	0.13	1
10. Analyzing Teaching Effectiveness	3.08 (0.64)	2.97 (0.51)	0.61	1
Assessment ANOVA	3.40 (0.37)	3.19 (0.37)	4.75*	1
11. Analysis of Student Learning	3.75 (0.49)	3.40 (0.59)	6.24**	1
12. Providing Feedback to Guide Learning	3.45 (0.65)	3.17 (0.61)	3.06	1
13. Student Use of Feedback	3.02 (0.50)	2.97 (0.59)	0.13	1
14. Analyzing Students’ Language Use and Literature Learning	3.17 (0.55)	2.98 (0.25)	2.81	1
15. Using Assessment to Inform Instruction	3.60 (0.62)	3.42 (0.59)	1.38	1

Note. $n = 30$. Standard deviations appear in parentheses next to means.
* $p = .05$. ** $p = .01$.

6.24, $p < .01$. Each difference indicated that the SMILE cohort performed better than the traditional cohort.

When analyzing the descriptive statistics, we noticed that on 13 of 15 subsections, the means were higher for the SMILE than the traditional cohort. We therefore analyzed whether any aggregated scores would yield statistically significant differences. From these analyses we detected a statistically significant difference on the combined assessment rubric, $F(2, 60) = 4.75, p < .05$, with the SMILE cohort performing better than the traditional cohort.

Qualitative

Based on results from the quantitative analysis of edTPA performance, we analyzed focus interviews for evidence regarding processes that occurred within the SMILE model of student-teaching supervision that could account for SMILE teacher candidates' better planning for their students' diverse needs and analyzing assessment data than the comparison cohort.

Teacher candidates in the SMILE model of student-teaching supervision talked about lesson planning as a factor in their development as teachers. Specifically, they focused on both the challenges and benefits of learning to plan lessons. Teacher candidates worried about the structure of the lesson plan and how much feedback they received from their mentor teacher and university liaison on lesson planning. Despite those challenges, these teacher candidates also noted how lesson planning benefited them. For example, one SMILE teacher candidate stated that the process was demanding but beneficial. Another candidate stated how a focus on lesson planning engendered greater attention to pedagogical practice previously not considered important. Lesson planning "was helpful and a good starting point. I wouldn't have even thought about differentiation." One focus group, in particular, conducted an extensive discussion considering students' needs and differentiation, an area where they saw the greatest growth:

INTERVIEWER: What are the reasons for those changes?

TEACHER CANDIDATE 1: Focusing on the students.

TEACHER CANDIDATE 2: Yeah.

TEACHER CANDIDATE 3: Looking at demographics (GATE, ELL, etc.).

TEACHER CANDIDATE 2: Yeah, like, how do you differentiate to such variety? I got it from real-world experience [in the] classroom.

TEACHER CANDIDATE 1: Yes, learning to teach the lesson to classes with different needs.

TEACHER CANDIDATE 4: It was the same with me and math. Huge impact.

Teacher candidates in the SMILE cohort addressed assessment only in rela-

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tion to lesson planning. They stated that the lesson plan focus “helped out a lot. Objectives, assessments, . . . matching them together, thinking about what kids were doing, not just me. It was overwhelming at first, but great. It makes sense.” None of the teacher candidates in the comparison cohort mentioned assessment. The theme of lesson planning did arise in general terms. The following quotes are the extent of this cohort’s sharing about their development of a lesson-planning repertoire of practice:

“I have become a better planner”; “The supervisor can give feedback on the actual lesson plan design versus the overall teaching”; “I used trial and error when lesson plans were not working”; “I adapted lesson plans to different grade levels.”

Discussion

The purpose of the research presented in this article is to measure the effectiveness of a new model of supervising teacher candidates known as SMILE. To review, SMILE uses a lesson-study approach to supervise teacher candidates where a university liaison works with two to three teacher candidates and their mentor teachers at one school site in a PLC through three rotations that focus on classroom management, lesson planning and instruction, and using assessment to plan lessons. Using the edTPA, a performance-based assessment designed to measure the quality of teacher-education programs, we looked to determine whether teacher candidates who were supervised through SMILE performed better than candidates supervised with the traditional model. Findings show a trend toward higher quality planning for diverse learning needs and assessment analysis among teacher candidates who engaged in the SMILE model than among teacher candidates from the traditional cohort.

Apart from the model of supervision, the SMILE and comparison cohorts were quite similar. Not only did both cohorts take identical courses, but most of those courses were taught by the same faculty. In addition, focus group interviews indicate that teacher candidates in the SMILE cohort shared that planning for differentiation was an important part of their PLC interactions, whereas the comparison cohort hardly mentioned planning for lessons when describing their interactions with university supervisors. Therefore, it is plausible to infer that differences in outcomes on the edTPA can be attributed to differences in supervision.

We believe that SMILE’s lesson-study approach contributed to success in teacher candidates’ planning and assessment analysis. The ability for teachers to collaborate with each other is an important focus of the lesson-study approach (Fernandez & Chokshi, 2002; Lewis, 2002; Stigler & Hiebert, 1999) and a key feature of Rogoff’s apprenticeship of thinking (Rogoff, 1990, 2014). Several studies have shown that teachers appreciate the ability to share their ideas and concerns with others who face similar situations (Cohan & Honigfeld, 2006; Rock & Wilson, 2005). SMILE collaborative PLCs consisted of not only a university liaison and a

mentor teacher, but also at least one additional teacher candidate with her mentor teacher, providing teacher candidates with opportunities to share their concerns and ideas with colleagues who are facing similar challenges. The PLC discussions were structured to allow for a complexity and multiplicity of ideas to be shared within the community.

In addition to the ability to collaborate with others, we believe the iterative nature of SMILE's lesson-study approach contributed to success in planning and assessment analysis. By designing a supervision model where teacher candidates engaged in discourse about their own and their colleagues' lesson plans before implementation, teacher candidates had opportunities to consider aspects of instruction that they may not have considered otherwise. In effect, teacher candidates were encouraged to consider varied students' learning needs within their PLC planning meeting and had an opportunity to revise their lesson plans to address those needs. Mentor teachers had opportunities to legitimize and authenticate the practice by sharing their own accounts of considering students' diverse learning needs. It is possible that, as a result of such practice with planning, teacher candidates increased the likelihood of using this method independently on the edTPA.

This iterative process may have been especially useful in helping teacher candidates use assessment data to inform their instructional decisions. During the third rotation, SMILE teacher candidates brought assessment data to the PLC meeting as well as a private meeting with university liaisons. There, teacher candidates were encouraged to explain students' performances, paying particular attention to high-performing students as well as struggling students. In addition, teacher candidates were encouraged to find ways to strengthen their students' performance with individualized scaffolds and other learning aids.

The iterative process in the SMILE program was aided by the guiding questions designed to mediate teacher candidates' thinking. Each PLC meeting and conference between university liaison and teacher candidate was guided by a set of predetermined questions that were explicitly stated in the SMILE handbook (see the Appendix). All PLC members had access to these questions prior to each meeting. Moreover, teacher candidates were encouraged to use these questions to guide their thinking during the planning and reflection parts of the lesson-study process. Given Rogoff's (1990) emphasis on shared understanding, these guiding questions may have helped PLCs build a common frame of reference about repertoires of practice to be discussed and developed.

We believe that certain guiding questions were better suited to foster teacher candidates' consideration of concepts relevant to performance on the edTPA. Those questions include the first guiding question from Rotation A, the third and fifth guiding questions from Rotation B, and all four guiding questions from Rotation C (see the Appendix). Rotations A and B have face validity with affecting performance on the planning for diverse learners subscore of the edTPA, and Rotation C has face validity with the assessment portion of the edTPA. These questions could

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reflect the repertoire of practice associated with effective teachers that is measured by the edTPA.

Importantly, the guiding questions were just that, guiding. Each professional learning community's discussions focused on teacher candidates' specific needs. The guiding questions were designed to prime teacher candidates as well as other members of the PLC into thinking about diversity of students' needs and to consider assessment data when planning future lessons. Qualitative analysis of the focus group interviews supports how SMILE candidates perceived their growth. They acknowledged how lesson planning was emphasized in general and how lesson planning for diversity in particular was a major emphasis of the program. Conversely, focus group interviews of the comparison cohort included few and general mentions of lesson planning. Findings from the edTPA and focus groups tend to support the influence SMILE has on developing teacher candidates' repertoire of skills. Future research, however, should pay particular attention to what types of discourse in PLCs account for differences in edTPA performance.

Limitations of SMILE

Although SMILE facilitated significant differences in teacher candidates' performance on some aspects of the edTPA, we were concerned about the lack of differences between the two cohorts on other planning rubrics and especially instructional rubrics. We believe there are two possible explanations for these findings. First, lesson-study research reveals how collaboration among teachers is both a joy and a curse. On one hand, teachers do report enjoying opportunities to work with others in developing their teaching (Cohan & Honigsfeld, 2006). On the other hand, according to Carrier's (2011) research, some teachers fear being critiqued by their colleagues. Lewis (2002) and Stigler and Hiebert (1999) have suggested that the Japanese culture supports a collaborative nature among teachers within a PLC and concluded that they may be more open to being vulnerable with their colleagues. Moreover, their vulnerability is believed to be a necessary evil of professional development. Furthermore, Stigler and Hiebert noted that, "for whatever reason, teaching in the United States is considered a private, not a public, activity" (p. 123). Teachers in the United States may be less enthusiastic about giving or receiving critical and constructive feedback about instruction. This reluctance may be a factor in our data. Both cohorts of teacher candidates, mentor teachers, and supervisors/liaisons may be reluctant to give critical feedback about planning or instruction. Without critical feedback, teacher candidates are less likely to make substantial revisions to their planning or their instruction.

A second factor focuses on the importance of discussions within PLCs. SMILE teacher candidates had opportunities to discuss with their PLC members the importance of planning for student diversity and analyzing assessment data to plan future lessons. Guiding questions were deliberately designed to focus teacher

candidates' attention to these pedagogical skills that were aligned with the edTPA. Moreover, classroom teachers view discussions about planning for student diversity as highly relevant (Brighton, 2003). PLCs may have focused more on the practical issues related to instruction and less on the theoretical foundations of instruction about which the edTPA requires teacher candidates to write. In short, the goals of PLC interactions may not have been aligned with the goals of the edTPA in terms of instruction. This reflects findings from previous studies that highlight differences between university faculty and mentor teachers (Ajayi & Lee, 2005; Cuenca et al., 2011; Svengalis, 1992; Zeichner, 2002). These differences may be a reflection of faculty endeavoring to foster more theoretical discourse than what mentor teachers desire. For teacher candidates to outperform their counterparts in the comparison group, a shared understanding about the balance between practice and theory would need to be developed among all PLC members.

Findings are also limited by confounding variables associated with participants' being situated within an authentic setting of a teacher-credentialing program. Each teacher candidate had a unique guide teacher with unique practice, which translates into idiosyncratic daily interactions and development of repertoires of practice. Furthermore, SMILE teacher candidates completed their student teaching in different schools from teacher candidates in the comparison cohort. School cultures, therefore, constitute another confounding variable that we cannot adequately address due to a small number (four or fewer) of teacher candidates at each school site.

Implications and Conclusions

Student-teaching supervision is a critical part of teacher education. Until this research, the effectiveness of different models on instruction had not been empirically examined, largely because the tools to do so did not exist. Now that teacher-education programs are having to adopt validated performance assessments that measure teacher candidates' instructional skills, it is possible to examine different supervision models. Using a performance-based assessment known as the edTPA, we were able to compare two models of student-teaching supervision.

We can conclude from the present research that a lesson-study approach to supervision can affect teacher candidates' instructional development. Using Rogoff's apprenticeship in thinking as a lens, we see that a lesson-study approach has the potential to affect teacher candidates' development of pedagogy in three ways. First, SMILE places teacher candidates in environments where reflective practice is encouraged. Second, this reflective practice takes place within communities consisting of other teacher candidates, mentor teachers, and a university liaison. Finally, these communities should work collaboratively to build shared understanding about the repertoire of practice surrounding the practice of instruction. Shared understanding among all PLC members, particularly mentor teachers and the university liaison, is the most persistent challenge of any model of student-teaching supervision. A

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lesson-study approach has the potential for shared understanding to be developed. Conscious attention to building shared understanding must be a goal for each PLC. As public schools continue to become ethnically and academically diverse, teacher candidates need to develop effective skills to support diversity in learning and use of assessment data to make informed instructional decisions. The iterative process associated with the lesson-study approach appears to be effective in developing these pedagogical skills.

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Appendix

SMILE Guiding Questions for Rotations

Rotation A: Classroom Management (Fall Semester)

1. What's in your lesson plan that shows your fostering rapport with students? What's in your lesson plan that shows your using students' life experiences and cultural backgrounds to make connections with students?
2. What teaching behaviors and routines are you including in this lesson plan to encourage and support on-task student behavior and minimize disruptive behaviors? Because off-task behaviors are often hard for new teachers to detect, what strategies do you plan on using to monitor students' on-task engagement and, if necessary, redirect students' off-task behavior? Where can you embed those strategies in your lesson plan?
3. In what ways are you helping students learn, practice, and internalize the expected routines and behavioral norms?
4. What's in your lesson plan that shows your fostering positive interactions among students and creating a classroom culture where students feel a sense of inclusion and responsibility to and for one another?
5. What have you and your mentor teacher planned to be the consequences for disruptions or misbehaviors in class? Include a basic description of these in your lesson plan. What will be your strategy for implementing these equitably and consistently?

Rotation B: Lesson Plan Development and Instruction (Fall Semester)

1. Describe the way in which your objectives, instruction, and assessment are aligned with one another.
2. Identify opportunities where you planned for students to practice (when appropriate) listening, speaking, reading, and/or writing. Describe how these language development opportunities support students' content understanding.
3. Looking at your instruction (includes anticipatory set), at what point do you explain the purpose of the lesson? How does this lesson (content/strategies) build upon previous lessons? How does this lesson build upon students' prior personal experiences (culture, home

lives, etc.)? How do you help students believe that they have some background knowledge for the lesson? How does this lesson prepare students for the next lesson?

4. Where in your lesson plan do you visually represent information to support students' comprehension of difficult concepts?

5. Where in your lesson plan do you check for understanding? Describe how that information will determine the pace of your instruction. What changes are you prepared to make to your lesson based on that information?

Rotation C: Evidence-Based Planning (Spring Semester)

1. Who participated in the lesson? Why? What more could you do to engage students?

2. Describe how you checked for understanding. Did this method provide the information you need about student learning for all students, some students, a few students? What could be done better or differently (strategies for checking, frequency of checking, etc.)?

3. What evidence did you collect from the class or from individual students that informs you about the students' progress toward the learning objective?

4. Did some students understand the objective more quickly than others? Did some students struggle with the objective? What do you think are the reasons for these differences?