Examining Three Approaches to Supporting English Learners by Leveraging Technology

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Exchanging Three Approaches to Supporting English Learners by Leveraging Technology

Jillian M. Conry

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Author Note

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Abstract

This three-article dissertation examines three distinct approaches to supporting English learners (ELs) by leveraging technology. Framed by the third generation of cultural-historical activity theory (Engeström, 1987; 2001), this research illuminates ways different stakeholder groups within varying activity systems support ELs, by examining technology as 1) an instructional tool in the classroom, 2) a mechanism for family engagement, and 3) a means for preparing teachers to serve ELs. Types of technologies implemented in these studies include various online multimodal tools (e.g., VoiceThread, Zaption), learning management systems (e.g., Edmodo, Canvas), social media platforms (e.g., Facebook, Twitter), and mixed-reality simulation (MRS; e.g., Mursion). Results suggest that teachers, parents, and teacher educators can use technology as a mediating instrument to reach their own distinct objectives. These activity systems interact in pursuit of a shared outcome of supporting ELs by situating those supports within a larger ecosystem than the classroom.

Keywords: English learners, ELLs, technology, CHAT
Chapter I: Introduction

With more than 4.9 million students identified as English-language learners (ELLs) in US public schools and the percentage of ELLs (9.6 %) on the rise, the equity gap for students whose first language is not English represents a growing concern for US educators and policy makers. In Texas, the issue is even more prominent, as ELLs comprise 17.2 % of the state’s public-school student population (McFarland et al., 2019). According to the National Education Association (NEA; 2015), “achievement gaps between ELLs and non-ELL students are deeply rooted, pervasive, complex, and challenging” (p.3), so the solution will not be simple or swift. Indeed, National Assessment of Educational Progress (NAEP) data indicate disparities in reading, writing, math, science, social studies, arts, attendance, and graduation rates, suggesting that language development is paramount to ELL student success across grade levels and subject areas (NAEP Dashboards, 2019; NEA, 2015). Efforts to improve ELL student achievement have proven fruitful in some cases, as with eighth-grade reading scores which increased significantly for ELLs from 2015 to 2017. While this serves as a step in the right direction, it is important to note that non-ELL scores also increased significantly from 2015 to 2017 and remain significantly higher than ELL scores (The Nation’s Report Card, 2017). Thus, even as ELLs successfully make gains in school, equity gaps persist. This enduring issue with a mounting sense of urgency has prompted many scholars and practitioners to examine patterns of achievement and explore possible strategies for mitigating inequities for ELLs.

Meanwhile, mirroring the trend in the changing US student population, the number and diversity of technological tools available today has never been greater. Just as technology evolves continuously, so do the ways in which humans leverage technology to fulfill their own objectives. We have integrated technology into so many aspects of society, that digital literacy
has become essential for students to learn and represents one of the three categories of the 21st Century skills (Trilling & Fadel, 2009) adopted as standards by most states. Gee (2017) argues that in today’s world, high-quality teaching should use “multiple good technologies and good forms of social interaction” (p.157), and increases in schools’ investment in technology suggest that practitioners agree. Policy makers have similarly begun to devote attention and money to educational technology through policies like the US Department of Education’s (2017) National Education Technology Plan and Advancing Educational Technology in Teacher Preparation (Stokes-Beverley & Simoy, 2016). Initiatives such as E-Rate established by the Federal Communication Commission to make broadband internet and telecommunications services more affordable for schools and libraries across the country (FCC, 2018) help to realize the visions outlined in the aforementioned policies.

Consequently, digital devices and other forms of technology are now an integral part of the US education system from early learning through higher education, and public schools have at least one computer for every five children (Herold, 2016), thereby mitigating the “digital divide” in technology access that once threatened to exacerbate equity gaps between schools from different socioeconomic levels (Hargittai, 2003). Even the gap in access to technology outside of school has diminished thanks to countless technology initiatives that have provided students with tablets or laptops to use whenever and wherever they would like and the increased availability and affordability of digital devices. The equity barrier represented by the first-level digital divide was supplanted by the “second-level digital divide,” a term used to denote the difference in how people from different socioeconomic backgrounds use technology (Attewell & Battle, 1999; Hargittai, 2003). That is, even with equal access, different groups of people employ technology for a range of purposes. For instance, research has suggested that people from higher
socioeconomic backgrounds tend to leverage technology to further educational opportunities and civic participation while people from lower socioeconomic backgrounds more often use technology for entertainment and communication (Attewell & Battle, 1999; Warschauer & Ware, 2008). Similarly, schools that serve students from higher socioeconomic backgrounds use technology to conduct research and engage in higher-order thinking more often than schools from lower socioeconomic backgrounds which tend to use technology for remediation (Warschauer, Knobel, & Stone, 2004). Given this trend, the focus has shifted from simply distributing technology to training teachers and students how to use technology effectively and providing sufficient technical support.

Despite the ubiquity of technology in schools, much remains unknown regarding how to leverage technology successfully in education. Researchers have documented reasons to explain this empirical knowledge gap. First, it is difficult to accumulate timely, reliable research on any one tool, given the ever-evolving nature of digital devices, software programs, social media platforms, etc. and the time required by the peer review process (Winters, 2017). Second, troubleshooting issues can disrupt otherwise systematic integration or study of technology in schools (Zucker & Hug, 2008). Third, fidelity of implementation often emerges as a concern and may be difficult to track. For example, even in a school that adopts a particular tool campus wide, teachers’ varying levels of facility and enthusiasm with which they integrate technology lead to variation in implementation (Inan & Lowther, 2010). Additionally, its mobility sometimes impedes the feasibility of studying technology in authentic settings. Moreover, there have been many instances in which well-intentioned initiatives did not benefit students identified as at risk, and extant literature reports mixed findings regarding the effectiveness of using technology to close achievement gaps (Darling-Hammond, Zielezinski, & Goldman, 2014). While some
scholars attribute the dearth of research to the lack of demand for evidence by the school leaders and consumers who invest in education technology (Hollands & Escueta, 2019; Neuhaus, Oreopoulos, & Kane, 2018; Winters, 2017), scholars and practitioners alike express a desire for more research on education technology to guide decision making regarding technology adoption and use (Cavanaugh, 2019; Neuhaus, Oreopoulos, & Kane, 2018).

Responding to this call, in the field of education, researchers have begun to study, test, and hone the use of technology for a wide range of purposes including improving student outcomes like academic achievement. Evidence of the potential for technology to support historically underserved student groups, such as ELs, has fortified the hope of educational technology proponents, and many believe technology provides new opportunities for transforming education (Collins & Halverson, 2018; Gee, 2017). Not unlike the Industrial Revolution, Collins and Halverson (2018) predict the magnitude of the Information Revolution transpiring now will result in a vastly changed education system.

Moreover, the intersection between technology and language learning is well documented and has resulted in many categories of research interests and related professional organizations that focus on teaching language with or through technology (Chun, Kern, & Smith, 2016). The growing need for skills revolving around technology has led to a push to embed a new layer of literacy into curricula: digital literacy (Gee, 2017; Trilling & Fadel, 2009), and Chun, Kern, and Smith (2016) assert that “it is so pervasive and so interwoven with human activity that to teach language without some form of technology would create a very limited and artificial learning environment—if it were even possible at all” (p.65)

Given the changing landscape of student populations, societal norms, the labor market, and access to information, weighing the affordances and limitations of our increasingly
technology-rich world, public education emerges as a promising instrument for improving equity (Collins & Halverson, 2018). Technology’s prominence in today’s world and its potential for facilitating equitable education for diverse learners makes it worthy of persistent study by advocates of ELs and serves as the focus of my research agenda.

**Research Agenda**

With the overarching goal of providing equitable education for ELLs, my research brings together both of the aforementioned lines of inquiry (i.e., how to close ELL achievement gaps and how to best make use of technology in education) by examining cases that employ technology in serving linguistically diverse students. Like many others, I consider technology a promising tool for teaching and learning in a wide range of contexts and am inspired by a vision of educators harnessing the transformative power of technology to connect people with other people, places, knowledge, and ideas all over the world. Yet I realize technology is not a panacea, and studying tools without regard for the countless contextual factors surrounding its use does not elucidate practical implications. Therefore, rather than focusing on a particular kind of technological tool or a single group of technology users, my research agenda aims to illuminate the contexts, processes, and outcomes of intentional uses of technology for educational purposes, with the greater goal of empowering educators to provide diverse students with more effective and efficient learning opportunities. In my work, I have analyzed data collected from ELLs as well as parents, teachers, and school leaders who serve ELLs. They are unified by their explicit focus on linguistically diverse students and their choice to use technology as a mediating tool to provide academic support for ELLs. That is, in all cases, teaching ELLs about technology is not the intent—providing academic support through technology is the target. Systematic study of
cases of innovative approaches to meeting ELL needs can help us understand why, how, and to what end technology may aid stakeholders in the endeavor to alleviate education inequities.

**Conceptual Framework**

Grounded in socio-cultural perspectives forwarded by Vygotsky and other developmental psychologists, Leontiev’s (1978; 1981) activity theory built on Vygotsky’s (1978) triangle of artifact-mediated interaction between an individual subject and an object. Leontiev framed human activity using a hierarchical structure, connected to particular conditions, goals, and motives, in which activity systems, rather than individuals, serve as the unit of analysis. Cultural-historical activity theory (CHAT), also known as the third generation of activity theory (Engeström, 2001), further extends the model by situating activity within multi-voicedness and historicity and depicts how multiple activity systems may interact with each other toward a shared outcome.

An “activity system” refers to any action taken for a particular purpose. The person or people doing the activity are labeled the “subject” of the activity system, and the intended outcome is the “object” of their activity. For example, a common activity system is that of a group of students (the subject) working to satisfactorily complete a group project (the object). The “tools” or “artifacts” they employ in the process might include concrete items such as books, computers, and paper, or intangible tools like language and the internet. Their actions are grounded in their individual and collective histories and tend to adhere to the rules and conventions of their context, such as the guidelines provided by the teacher in the assignment description and social norms for collaborative groupwork. The group, which by definition includes particular people and excludes others, is still connected to people in the community who help mediate the activity to some extent. The teacher’s expectations and perhaps parents’ desire
for their students to succeed may interact with the group’s activity if they contribute to the group’s preparation or execution of their plan. For instance, moral support from adults may inspire students, and their provision of required materials facilitates the completion of the group project. In this example, the group’s families, teachers, and classmates represent part of the “community” of this activity system. How the group members divide and delegate work comprises the “division of labor” represented in Engeström’s (1987; 2001) activity system model. This model offers a structured way to visualize and analyze complex activity systems and isolate patterns within or across parts of the systems without decontextualizing the components.

CHAT serves as a foundational theoretical framework in many fields including the multidisciplinary field of human-computer interaction (Kaptelinin, 2015) and orients my own research. Its flexibility is ideal for studying separate actions by distinct groups that share a common goal. Its outcome-oriented nature provides a framework for focusing on actions aimed at specific objectives, and its structure does not assume components are static; rather, like human interaction, activity systems are dynamic. The advantage of defining the subject and object of an activity system is that it allows for a bounded scope for concentrated focus on another component of interest, such as tools. Defining components also makes it apparent when something or someone moves in or out of an activity system or overlaps with a component of a different activity system. For example, in the previous example, teachers were part of the community helping to comprise the social basis of a group project activity system, but teachers serve as the subject when they plan lessons, provide instruction, or evaluate students.

As shown in Figure 1, in my work, education stakeholder groups, such as teachers, parents, or teacher educators, serve as what CHAT theorists call the “subject,” and “object” of activity. The community, division of labor, rules, and mediating artifacts also known as
instruments, vary, depending on the context of the study and which stakeholder group is the
subject. However, in all cases within my scope of work, “instruments” include and often
emphasize technology. The types of technology vary and include various online multimodal tools
(e.g., VoiceThread, Zaption), learning management systems (e.g., EdModo, Canvas), social
media platforms (e.g., Facebook, Twitter), and mixed-reality simulation (MRS; e.g., Mursion).
These interacting systems coordinate to result in collaborative support of ELLs and hopefully
improved student outcomes. Thus, CHAT serves as a lens through which I hope to gain a deeper
understanding of the interrelatedness of teachers’, parents’, and teacher educators’ efforts to
support ELLs.
**Figure 1.** Interrelatedness of research comprising this dissertation framed by a modified version of Engeström’s (1987; 2001) activity system model.

**Dissertation Purpose**

My research agenda aims to explore how technology can be used to support ELLs both directly, through instruction, and indirectly, by empowering their families and teachers to effectively serve ELLs. Correspondingly, this dissertation aims to illuminate ways different stakeholder groups within varying activity systems support ELLs, by examining technology as 1) an instructional tool in the classroom, 2) a mechanism for family engagement, and 3) a means for
preparing teachers to serve ELLs. Using the three-article dissertation format, I explored three cases of collective subjects (i.e., teachers, parents, and teacher educators) leveraging different types of technology, such as online multimodal tools, learning management systems, social media, and mixed-reality simulation, to achieve related objectives with a common intended outcome of supporting ELLs, and distally, resolving education inequities. I will now briefly introduce the three studies in turn and describe how each of the manuscripts comprising this dissertation aligns with CHAT and contributes to my body of work.

**Manuscript 1**

The first manuscript, titled “Affordances and task design: A case study of online mentoring between practicing teachers and adolescent learners” (Ware, del Rosal, & Conry, 2018) comes from a study of an e-mentoring program in which teachers interacted asynchronously with students in a high-school ESL class and provided personalized language instruction through a variety of online tools. The following questions guided this case study: 1) Which affordances were drawn upon by mentors and mentees across the 10 weeks of communication? 2) In what ways did the mentors and mentees act upon the affordances of these tools to accomplish particular communicative purposes? 3) In what ways did mentors align the selection of affordances with particular pedagogical purposes? 4) How did the affordances of the technologies influence the mentors’ understandings of their mentees?

In this study, as depicted in Figure 1, teachers were the subject, and providing effective language instruction and engaging ELLs in rich language use served as the object of activity in Engeström’s (2001) third-generation CHAT model. Technology, including laptop computers, the internet, the learning management system Edmodo, and online tools such as, VoiceThread, StoryBird, Zaption, Quizlet, and GoogleDocs, brought the students and teachers together
asynchronously, provided an interface for (and sometimes the topic of) communication, and served as instructional tools.

**Contributions to Affordances and task design: A case study of online mentoring between practicing teachers and adolescent learners**

- Recruited secondary school for study
- Drafted district IRB proposal section related to how the project aligns with the district’s vision and benefits its stakeholders
- Prepared and maintained secure data storage system
- Designed, launched, and maintained the landing page for partners to connect online and link to other digital content
- Created accounts for participants for all online instructional tools used in the study
- Coordinated site logistics including scheduling visits, distributing and collecting consent forms, providing technical support, working with campus IT team to allow access to all online tools used in the program, and managing materials
- Prepared and administered participant follow-up survey
- Helped draft interview protocol and served as an interviewer
- Analyzed data from online interactions between teachers and students
- Created an inventory per online tool of tasks assigned to students
- Coded thread interactions and calculated counts by category
- Drafted and submitted related conference proposals and presented at CALL and TESOL
- Served as third author
- Selected representative quotes to exemplify codes and support claims in narrative
- Created and formatted all tables and figures
Cross-checked internal citations and references
Recommended chapter revisions and edits in preparation for submission

**Manuscript 2**

The second manuscript, titled “Virtual and physical interactions in school-based spaces: Latinx parent engagement in a high-tech urban elementary school” (Pavlakis, Conry, & del Rosal, in press), elucidates the ways parents engaged with their students’ educations within and beyond school walls during a study of a 1:1 4G-tablet initiative. The research questions were: 1) How did resources and norms around technology and language shape Latinx parent engagement? 2) How does Latinx parent engagement manifest within and across different spaces of the school?

In this study, Latinx parents were the subject, and engaging with their children’s education was the object of activity in Engeström’s (2001) third-generation CHAT model. A high-tech school implementing a 1:1 4G tablet initiative served as the context for this case, and in this activity system, various technology tools, such as QR codes, YouTube, Twitter, and Facebook, served as instruments, which the findings reveal varied by space. The community included the parents’ children, other families, teachers, and school leaders. Furthermore, rooted in CHAT, Ecologies of Parental Engagement (Calabrese-Barton, Drake, Perez, St. Louis, & George, 2004) served as the key conceptual framework for this manuscript.

**Contributions to Virtual and physical interactions in school-based spaces: Latinx parent engagement in a high-tech urban elementary school**

- Prepared and maintained secure data storage system
- Planned, created, and helped present presentation for family technology night school event
• Met with corporate sponsor that funded project on multiple occasions
• Helped develop and administer interview and focus group protocols
• Conducted observations and recorded field notes of all school events related to the project
• Set up Nvivo codebook and data sources for all authors so coding could be merged and reliability calculated
• Ran descriptive statistics on demographic and survey data
• Attended weekly meetings to discuss emergent themes, conceptual frameworks, relevant literature, potential journals for submission, plans for reporting to school and donor, and manuscript next steps
• Helped draft and revise comprehensive report and executive summary for funders
• Created multimedia summative report to accompany written reports for funders
• Drafted tables and helped draft figures for technical reports and manuscript
• Helped draft related conference proposals and presented at AERA and UCEA
• Served as second author
• Drafted all sections of the literature review related to technology
• Helped draft responses to reviewer comments
• Helped draft methods section and discussion related to technology use
• Recommended manuscript revisions and edits in preparation for initial submission
• Trimmed text without omitting content to comply with word limits
• Recommended revisions and edits for letter to the editor and response to reviewer feedback
• Supported first author in responding to reviewers’ feedback
The final study of my three-paper dissertation is called “Effects of a blended professional development program on teachers’ quality of English learner instruction” and comes from a study of a federally funded professional development project that provided pre- and in-service teachers with two semesters of blended graduate coursework focused on strategies for teaching ELLs and prepared them to take the state exam for ESL certification. To allow for an additional line of inquiry, participants were randomly assigned to one of two locations for their face-to-face class time: the university campus, or a local community site where they tutored ELLs for the first hour of class. All teachers learned through the same weekly online modules comprising a wide range of interactive tasks and web-based content. Technology types used include the learning management system Canvas, Kaltura, Padlet, EdPuzzle, and various online sources of content such as the Teaching Channel and journals. Everyone met face to face for the same three hours on the same night each week for two semesters.

Teachers’ instruction was captured using a mixed-reality simulation lab where teachers taught a small group of avatar students at the intermediate English language proficiency level before and at the end of the professional development program. To examine the impact of the program, I led the research team in developing an observation protocol to measure quality of ELL instruction exhibited during the simulations, and the following research questions guided my subsequent analysis: 1) Did teachers demonstrate improvement in their quality of ELL instruction after two semesters of a blended professional development program? 2) Was group
assignment (i.e., university-based versus community-based) associated with whether or not teachers improved in quality of ELL instruction?

In this study, two activity systems transpired in parallel: one in which teachers were the subject and providing high-quality instruction for ELLs was the object of activity, and one in which teacher educators were the subject and designing engaging modules and developing a reliable measure of quality of ELL instruction was the object. In accordance with Engeström’s (2001) third-generation CHAT model, these two activity systems interacted with a shared intended outcome of providing high-quality instruction to ELLs. See Figure 1. Mediating technology instruments used throughout the program included computers, webcams, Canvas, a learning management system, the various online tools used therein (e.g., Qualtrics, Padlet, Kaltura, EdPuzzle, GoogleForms, Box), videos, website content. To assess teacher’s quality of ELL instruction and minimize the potential for extraneous variables, teacher educators used Mursion, a mixed-reality classroom simulation program using avatar students, to simulate a more controlled environment than a real classroom. This technology served as a measurement tool and instructionally, as a means for providing formative support through reflection.

**Contributions to Effects of a blended professional development program on teachers’ quality of English learner instruction**

- Piloted mixed-reality simulation teaching protocol
- Helped train simulation specialist to simulate English learners with intermediate English language proficiency
- Helped prepare and maintain secure data storage system
- Helped design online modules and embedded content and assignments
- Facilitated weekly rollout of online modules
- Served as one of the instructors of record for the professional development courses
- Helped draft teaching snapshot observation rubric
- Refined observation rubric and developed training protocol
- Recruited and trained raters
- Coordinated logistics for scoring video data including deidentification and secure storage of videos, scheduling meetings, preparation of materials, facilitation of discussion around score agreement, and compilation of scores
- Planned, compiled, and cleaned dataset
- Planned and ran all statistical analyses
- Drafted related conference proposal for AAAL
- Drafted complete manuscript and accompanying tables
- Served as first author

These three distinct studies provide insight into three different cases involving ELLs, advancing my research agenda in unique ways. However, taken together, the findings may reveal a larger pattern to guide my future research. Each of these manuscripts contributes to the literature base regarding ways to support ELLs and represents some of the countless uses of technology that have the potential to mitigate educational inequities for ELLs.
Chapter II: Affordances and task design: A case study of online mentoring between practicing teachers and adolescent learners (Ware, del Rosal, & Conry, 2018)

*We can imagine the creation and ‘transmission’ of whole virtual environments. These will be powerful instruments of communication and persuasion. But we can ask: In the high-bandwidth environment, what will become of argument and criticism? When you can send your ‘world’ to me, what do I do? – Kolb 1996, 19*

Over twenty years ago in his reflection on the perceived direction that computer-mediated communication was heading at the time, Kolb (1996) imagined a future that, in many ways, has come to fruition for millions of individuals who now have easy access to high bandwidth communication systems. Many of us actively send our “worlds” on a daily basis through words, images, movies, music, icons, emoticons, ringtones, and any number of possible combinations derived from these rich semiotic systems. Language researchers interested in Internet-based communication have been staking out different terrain within these dynamic mediated worlds to better understand how the constantly evolving modes for communication can enrich, interrupt, and extend language learning and use both inside and outside of the classroom.

In this project, we focus on the interactions that took place among a group of 13 language teachers enrolled in a graduate program and 11 high school (grade 9 and 10) youth representing six different linguistic and cultural backgrounds as they engaged with one another through a variety of multimodal activities in an online mentoring exchange project. We analyze how the language teachers in this project developed their competence in making strategic use of the affordances of different technological tools to create pedagogical tasks and to sustain
interpersonal interactions with their adolescent mentees. We also discuss how the multimodal affordances of these tools fostered unique online communication spaces in which mentors and mentees experienced the presence of “the other” with different degrees of closeness. They leveraged a wide range of multimodal tools, including asynchronous visual contact via screens, audio presence through voice recording software, and text- and emoticon-based messages that linked these more layered communicative resources together.

**Conceptual Grounding: Affordances and Task Design**

This study sits at the intersection of overlapping areas of research in language education. From research on telecollaboration in the post-secondary context, we acknowledge that different forms of communication, trajectories of language development, and expressions of intercultural competence are manifested across asynchronous, synchronous, text-based, and multimodal contexts (for a review, see Ware, Kern, and Warschauer 2016). We explicitly draw on the conceptual constructs of *affordances* to examine teachers’ awareness of the properties of different technologies, as well as their understanding of how these properties can be aligned to their content, relevant to different contexts, and accessible to their students. Finally, we utilize the work on *task design* in telecollaboration as an analytical lens to provide a more granular understanding of how language teachers learn to make use of the different technological and pedagogical affordances in the context of online language mentoring in order to create meaningful and well-executed online language learning tasks for their mentees.

The notion of affordances helps researchers examine a range of symbolic resources, interactional contexts, and modes of communication that are increasingly available in Internet-based interactions. The original conception of affordances can be traced back to the psychologist James Gibson (1979), who examined animal perception and described affordances as the
properties that characterized the relationships between an organism and the objects in its environment, such that individuals can act on the properties for positive or negative outcomes. In language education research, Leo van Lier (1998, 2000) popularized the idea of affordances as a way to describe the properties of language learning environments as situated within an ecological theoretical lens. In this sense, affordances can be likened to a first-level type of *artifact* (Cole, 1996), as the primary, tangible tools that produce material objects or social possibilities. These artifacts have no volition of their own, but individuals can act on them as affordances—take them up, utilize them, ignore them, or transform them. The construct of affordances, therefore, allows researchers to examine the combination of *properties* of technologies, on the one hand, with how individuals ultimately interpret and use those properties, on the other (Selwyn and Facer 2007). Cole (1996) would describe these as secondary artifacts, or the different “modes of action using primary artifacts” (Cole 1996, 121). This level points to the socially produced modes of communication that emanate from the choices humans make when using artifacts.

In recent research, the notion of affordances has focused on the role of the instructor in making connections between technology affordances and pedagogical uses. Haines (2015), in a recent study examining two foreign language teachers’ development of tool use over time, defined affordances as “the potential that teachers perceive in a particular technology tool that will support learning and teaching activities in their educational contexts” (p. 166). She cautioned that an over-emphasis on the tool itself and the properties inherent in the tool risks overlooking the importance of the teachers’ understanding of the ways in which particular tools can be leveraged to support particular pedagogical purposes. This concern is also forwarded by Guichon and Hauck (2011), who coined the term *techno-pedagogical competence* as way to
capture the importance of targeted, specific instructional goals with particular technological affordances.

Findings from both these studies help clarify two important distinctions in conceptualizations of affordances in language research. First, the relationship between the affordances of the tools and the instructional practices to which they can be leveraged require educators who can enact this relationship in pedagogically appropriate and targeted ways; and second, techno-pedagogical competence is not demonstrated by a single enactment of matching affordances to pedagogical practices, but rather is developed over time across multiple contexts through situated learning experiences. To this point, Haines (2015) gives specific suggestions for how teachers might frame their exploration of the affordances of new tools through framing questions that build across experiences and time. This type of prolonged engagement with making connections across affordances, pedagogical practices, and individual learners helps to offset the concerns raised by Comas-Quinn (2011) that teachers might be able to use tools in a mechanistic way but without a deeper understanding of the rationale behind the use.

Turning to task design, tasks in online language exchanges have been discussed in a number of ways. In international telecollaboration projects, for example, O’Dowd and Ware (2009) offered a synthesis of the types of tasks that have been folded into distance projects. Their typology of task types covered a range of activities, from those that took place in a single class period, to multiple weeks of project-oriented work. Their typology was derived by conducting a review of published research on international telecollaborative projects, and 12 general task types emerged. These tasks were then categorized into three macro-areas of Information Exchange, Comparison and Analysis, and Collaboration and Product Creation. Other categorizations for online language exchanges have emerged, such as those proposed by Helm
and Guth (2010), who analyzed telecollaboration tasks into categories used by critical literacy studies: overt instruction, situated practice, transformed practice, and critical framing. They also underscored the need for teachers to consider sequencing of tasks, both within and across tasks. They also emphasized the dearth of research on tasks that promote collaboration and product creation.

Thorne and Reinhardt (2008) have proposed the construct of *bridging activities* that allow second language educators to target Internet-specific genres of language use and use formal instruction to “enhance engagement and relevance through the incorporation of students’ digital-vernacular expertise, experience, and curiosity, coupled with instructor guidance at the level of semiotic form to explore interactional features, discourse-level grammar, and genre” (p. 558). Taken together, this work on task types in online exchanges has led to a number of themes. First, researchers have called for developing a better understanding of the effectiveness of particular tasks, of sequencing, of task cycles, and of clustering. More mapping of outcomes to particular skills within linguistic, technological, and cognitive domains is needed, as is a better understanding of which technologies map onto which types of interactions.

This chapter adds to the previous work on affordances and on task design by examining how the affordances of text-based and audiovisual communication systems were drawn upon by teacher mentors as they created tasks for their adolescent learner mentees. Our analysis is guided by the following four questions: 1) Which affordances were drawn upon by mentors and mentees across the 10 weeks of communication; 2) In what ways did the mentors and mentees act upon the affordances of these tools to accomplish particular communicative purposes; 3) In what ways did mentors align the selection of affordances with particular pedagogical purposes; and 4) How did the affordances of the technologies influence the mentors’ understandings of their mentees?
Methods

Participants

Participants were 13 graduate students in a small urban university located in a southern state in the United States, who were earning their Master’s degree in Education. As part of one of the 12 courses in the program sequence, they were enrolled in a course focused on developing strategies for teaching English as a Second Language (ESL) students. Youth participating in the project included 11 high school ESL learners in a single public school located in the same geographic area at a school 25 miles from the university. They participated as mentees during a 10-week online mentoring program that was embedded into their high school ESL class. All mentors and mentees had basic technology skills associated with using mobile devices for communication in their everyday life. However, the mentors all reported limited experience using technology as an explicit language teaching tool. Mentees were ESL learner students, with different backgrounds and levels of English proficiency in grades 9-12 (see Table 1), all of whom were enrolled in an English language development high school course. Levels of language proficiency were determined by the school district using the four state-wide proficiency levels (beginner, intermediate, advanced, and advanced high) as adopted and regulated by the state through its English Language Proficiency Standards (ELPS) bylaws (Texas Education Agency, 2011). Students came from 6 different countries, including the US, who were classified as ESL students because of their linguistic proficiency status. US-born students in recently immigrated families are often placed in ESL courses based on their proficiency levels, not their immigration status.

Table 1. Mentees: Demographic Information.

<table>
<thead>
<tr>
<th>Partnership</th>
<th>Pseudonym</th>
<th>Gender</th>
<th>Home Country</th>
<th>Home Language</th>
<th>Grade Level</th>
<th>Proficiency Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>First Name</td>
<td>Gender</td>
<td>Country of Origin</td>
<td>Language</td>
<td>Grade</td>
<td>Level</td>
</tr>
<tr>
<td>---</td>
<td>------------</td>
<td>--------</td>
<td>-------------------</td>
<td>----------</td>
<td>-------</td>
<td>-----------</td>
</tr>
<tr>
<td>1</td>
<td>Laura</td>
<td>Female</td>
<td>El Salvador</td>
<td>Spanish</td>
<td>9th</td>
<td>Beginner</td>
</tr>
<tr>
<td>2</td>
<td>Karen</td>
<td>Female</td>
<td>Dominican Republic</td>
<td>Spanish</td>
<td>9th</td>
<td>Beginner</td>
</tr>
<tr>
<td>3</td>
<td>David</td>
<td>Male</td>
<td>Argentina</td>
<td>Spanish</td>
<td>10th</td>
<td>Intermediate</td>
</tr>
<tr>
<td>4</td>
<td>Richard</td>
<td>Male</td>
<td>El Salvador</td>
<td>Spanish</td>
<td>10th</td>
<td>Intermediate</td>
</tr>
<tr>
<td>5</td>
<td>Nancy</td>
<td>Female</td>
<td>India</td>
<td>Urdu</td>
<td>9th</td>
<td>Intermediate</td>
</tr>
<tr>
<td>6</td>
<td>George</td>
<td>Male</td>
<td>Ethiopia</td>
<td>English</td>
<td>10th</td>
<td>Advanced</td>
</tr>
<tr>
<td>7</td>
<td>Lisa</td>
<td>Female</td>
<td>U.S.</td>
<td>Spanish</td>
<td>9th</td>
<td>Advanced</td>
</tr>
<tr>
<td>8</td>
<td>Sandra</td>
<td>Female</td>
<td>India</td>
<td>Malayalam</td>
<td>9th</td>
<td>Advanced</td>
</tr>
<tr>
<td>9</td>
<td>Susan</td>
<td>Female</td>
<td>U.S.</td>
<td>Spanish</td>
<td>10th</td>
<td>Advanced High</td>
</tr>
<tr>
<td>10</td>
<td>Linda</td>
<td>Female</td>
<td>U.S.</td>
<td>Spanish</td>
<td>9th</td>
<td>Advanced High</td>
</tr>
<tr>
<td>11</td>
<td>Steven</td>
<td>Male</td>
<td>U.S.</td>
<td>Spanish</td>
<td>10th</td>
<td>Advanced High</td>
</tr>
</tbody>
</table>

The online mentoring program was developed as a 10-week semester project required for course credit for all 19 teachers who were enrolled in the 3-hour Masters course. All 19 graduate students in the Masters course were required to participate in the online mentoring program, and all 19 were invited to also participate in the study investigating the program. However, only 16 consented to allowing their interactions to be used for research purposes. Because the human subjects regulations at the university mandated that any data that overlapped with non-consenting students be removed from analysis, the final number of participants included in the study was 13 graduate students and 11 adolescents.

**Procedures**

The online mentoring program had two overarching purposes. First, it offered graduate student language teachers a contextualized learning experience working one-on-one with ESL
students, in which they could apply what they were learning in their Masters course by designing and facilitating language learning tasks and by receiving feedback on their work from the course instructor and from the mentees. Second, the mentoring program offered mentees an opportunity to have one-on-one support from a language mentor, to use English in a low-stakes environment, and to learn English through language learning tasks that targeted their specific language learning needs and their interests.

**Structure.** The online mentoring program was structured around weekly tasks that were individually developed by the graduate student mentors as part of demonstrating their ability to create language learning tasks aligned to their students’ individual profiles and linguistic proficiency levels. Table 2 provides an inventory that represents the range of tasks that the mentors were being taught to develop as part of their graduate coursework. Mentors learned about the design and delivery of instruction for ESL students in class and used the online mentoring as an authentic context for building language learning tasks that aligned tool properties with different pedagogical strategies. Each graduate student was partnered with one ESL learner mentee for a ten-week period. Mentors were charged with creating age-, content-, and language-appropriate learning tasks at least once a week on their own time. They were required to apply the pedagogical strategies and technology tools they were learning in their graduate course to the hands-on, authentic context of the online mentoring program. Because the mentees represented a wide range of linguistic proficiency levels and cultural backgrounds, the mentors were given autonomy to draw on the different affordances of the technologies in culturally and linguistically appropriate ways that demonstrated their understanding of pedagogical principals for language learner instruction online. In their reflection logs, mentors were required to provide an explicit analysis of why they utilized particular resources and of how
their technological, pedagogical, and linguistic choices manifested in particular interactional and learning affordances for their mentees. Mentees responded to their mentors’ postings once each week during a 90-minute supervised class period as part of their high school ESL class.

Table 2. Sample Task Types that Align Tool Properties and Pedagogical Strategies.

<table>
<thead>
<tr>
<th>Language activities</th>
<th>Tools and properties</th>
<th>Proficiency level</th>
<th>Pedagogical strategies</th>
</tr>
</thead>
</table>
| Learners will listen to and read six chronological events about a historical figure and will answer questions by speaking in full S-V-O sentences. | Multimodal tool (VoiceThread). Offers visual textual support with hyperlinked voiceover for listening and multiple playback options. Offers audio and video recording of learner’s oral production. | Beginner | a. Providing cloze-gap listening activities  
b. Using sentence stems for sentence identification  
c. Using clear, predictable oral text  
d. Eliciting output with multiple scaffolds |
| Learners will listen to a video about a cultural figure from their home nationality and will write one-word and full sentence responses at regular intervals in the video. | Multimodal tool (Zaption interactive video). Offers the ability to provide captions, create annotated glosses, embed questions, elicit written responses, and provide data analytics of viewing time and recorded responses. | Intermediate | a. Modifying input in speech and text through simplified syntax  
b. Activating background knowledge through an adapted video  
c. Providing aural and visual stimuli  
d. Providing annotated glosses for new vocabulary |
| Learners will read 2 models of persuasive paragraphs, analyze the discourse features, write in response to a prompt, and revise based on feedback. | Text-based document sharing (Edmodo and Google Docs). Offers interactive text-based document sharing and mark-up options. Offers hyperlinking to video tutorials. | Advanced | a. Using model texts  
b. Using taped texts for scaffolding  
c. Providing explicit feedback  
d. Promoting noticing of genre features |
| Learners will transpose a video news report into a written summary and will verbally pose and answer questions at five different levels of questioning. | Multimodal tool and text-based document sharing. (Zaption and Edmodo) Offers the ability to toggle across tools and integrate production from multiple sources. | Advanced High | a. Focusing on form through skill integration  
b. Promoting noticing through error analysis of learner output  
c. Eliciting extended text production with a focus on genre |
Tools and their properties. The different technological tools used are briefly described here. Edmodo was the primary landing page for all interactions. The Edmodo platform (edmodo.com), mirrors the affordances of the more widely used Facebook social media platform. It offers strong privacy settings and teacher-directed controls, and because of these stronger restrictive parameters, the interface is not typically blocked by firewalls that are common in elementary and secondary schools. Like Facebook, this platform allows for a centralizing feed that can be hyperlinked to any number of external pages, and the display on the screen is in a similar layout. Unlike Facebook, however, Edmodo is controlled by a teacher who can also monitor the communication within and across groups. In this project, each partnership corresponded to its own unique Edmodo feed, and none of the partnerships were accessible to any other participants beyond those assigned to it.

In addition to Edmodo as the landing page and starting point each week, mentors had a choice of five additional technology tools for developing extension activities for their mentees that would be hyperlinked to the Edmodo feed. Two of these five tools offered audiovisual options: VoiceThread (VoiceThread.com) and Zaption (zaption.com). VoiceThread is a multimodal, asynchronous platform that supports the design of text-based, audio-only, and audiovisual language learning tasks. For example, mentors could start a conversational thread that could then be sent to one or many recipients, each of whom had the options for text-based, audio-only, or audiovisual responses. Zaption is a platform that allows users to import streamed video from sources such as YouTube (youtube.com) and Vimeo (vimeo.com) and then develop interactional activities such as multiple choice and open-ended response questions, as well as embedded polls and annotations. Mentors could use existing streamed videos of a variety of
academic or non-academic topics, or they could create their own streamed videos, and then use Zaption to create interactive wrap-around activities.

The three other tool options for mentors were primarily text-based, and the text could easily be supported by visual images. What differed in these tools from the audiovisual options was the relative static nature of the other three tools. They did not support the same level of multimodal integration as did Zaption and VoiceThread. In Edmodo Docs, for example, mentors could create worksheet-type assignments that were posted as shared documents within the Edmodo feed for mentees to complete. With Storybird (storybird.com), mentors created co-constructed stories using this asynchronous platform for story creation and editing across multiple users. Finally, mentors had the option of locating any “Other” web-based activity and directing their mentees’ attention to it. For example, with Quizlet, mentors could create sentence stems and vocabulary cards that were read aloud to mentees when clicked on and that supported them to listen to oral English and to practice its use as many times as they needed it.

Data collection and analysis. Data was collected through various sources: 1) online interactions across the text-based and audiovisual modes, 2) weekly online reflection logs from the mentors, 3) post-project focus group interviews with mentors, and 4) post-project one-on-one interviews with mentees. The interview protocols were semi-structured and used a combination of grand tour questions, reflective questions, and probes to balance rapport building with topic exploration (Brenner 2006).

Data analysis took place in three phases by using a process of analytical triangulation (Brantlinger et al. 2005; Miles and Huberman 1994). First, we conducted a descriptive statistical analysis of the technology modes that were used within partnerships to provide an inventory of the primary artifacts that were used across the project partnerships. To quantify this tool use, we
reviewed each of the 11 online partnerships and tallied the use of Zaption, VoiceThread, StoryBird, Edmodo Docs, and the category of “other” online tools that mentors used (e.g., Prezi, Quizlet, and online games addressing phonics and vocabulary). Each time that either the mentor or the mentee used the tool to interact with one another online, regardless of length, intensity, or type of use, was tallied as one instance of use. Using the tally count of tool use, we determined the frequency of use by online tool and by partnership. We evaluated each language learning task and coded the purpose and structure. In the most frequently used online mentoring tools, we also calculated the absolute and relative frequencies of features of language learning tasks (e.g. skills addressed, supports offered, types of question).

In the second phase of analysis, we identified how the interactions unfolded by examining the primary orientation of each post as either interactional, didactic, or combined interactional and didactic (See Table 3), and by analyzing the number of interactions that sustained a topic beyond just a one-time mention (“interactional chains”).

Table 3. Examples of Edmodo Feed Use Codes.

<table>
<thead>
<tr>
<th>Code</th>
<th>Definition</th>
<th>Example from Interactions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Didactic</td>
<td>The purpose of the post was solely to provide instruction or academic feedback.</td>
<td>“Linda, please watch the video on Malala Yousafzai, and answer the questions. Click the link below. <a href="http://zapt.io/t7f58wek">http://zapt.io/t7f58wek</a>”</td>
</tr>
<tr>
<td>Interactional</td>
<td>The purpose of the post was primarily social or relational.</td>
<td>“Beautiful! I love dance too! I am sure you will get to visit one day! 😊”</td>
</tr>
<tr>
<td>Both</td>
<td>Presence of both didactic and interactional elements was evident.</td>
<td>“I just got back from my trip to the capital, Washington D.C. It was very fun and I was excited to see friends and celebrate Thanksgiving with them! I took some picture of the Washington Monument and made a Voice Thread about its history. Please read about the Monument and answer the questions after looking at the photos. . . You can choose!”</td>
</tr>
</tbody>
</table>
After calculating the Edmodo interactions across these three modes, we analyzed how many of the initial Edmodo feed posts resulted in what we call a communication chain. In most tasks, we expected the mentor to post a question, comment, or task and for the mentee to respond to the mentor’s post. Therefore, we were interested to see if some mentor posts resulted in a “chain” response or in a higher level of interaction or engagement due to additional comments, questions, or tasks posted by the mentor or the mentee. We anticipated that partnerships that developed interactional chains and that combined both the didactic components of their interactions with interpersonal engagement would be more likely to develop meaningful and sustaining connections. We operationalized chains as an initial post in which there was one or more replies that took place in the context of the Edmodo feed or in which there was a response post in one of the audiovisual modes. We then calculated the percentage of posts that included a chain and organized them by partnerships and by language proficiency.

In the final step of analysis, we triangulated across the mentor and mentee interview data and conducted member checks (Brantlinger et al. 2005) for possible explanatory information of our initial findings. We used content analysis (Smith 2000) to examine themes in the types of cultural schemata that participants drew upon as they imagined who their partner was and interpreted what their partner intended during the exchange.

**Findings**

Research question #1: Which affordances were drawn upon by mentors and mentees across the 10 weeks of communication? Figure 1 offers a frequency count collapsed across all 11 partnerships and across the 10-week exchange. Edmodo interactions were not part of this tabulation, because Edmodo was a required entry point every week, so the chart below reflects
the autonomous choices made by mentors about the tools they preferred to use when developing and facilitating language learning tasks for their mentees. Mentors were free to develop online language activities across any of these five options at their discretion. Therefore, the chart offers an overall picture of which tools dominated the mentors’ choices for communicating.

As the chart indicates, mentors drew heavily on the two audiovisual options: VoiceThread and Zaption. Over half of the time (87 times), mentors drew on VoiceThread or Zaption, compared with their selections within the text-based modes of Edmodo Docs, Storybird and the other category (72 times). Our next analysis examined whether the distribution of these choices among tools was even across all 11 partnerships, or if particular patterns emerged between the partnerships. In Figure 2, we broke the tool frequency count into the 11 partnerships and organized the order of reporting the data based on student language proficiency level as determined by the ELPS (B=beginner, I=intermediate, A=advanced, and AH=advanced high).
This analysis of tool frequency by type and partnership uncovered differences in which tools were used to work with different proficiency levels. Mentors of beginning-level learners tended to use tools in the “other” category (Quizlet and online skills games) that emphasized simple vocabulary recall and word drills. In their later interviews, the mentors described these tools as allowing them to develop targeted, individualized instruction to guide their mentees toward practice with particular grammatical constructs and vocabulary terms. Mentors of advanced-high learners, in contrast, tended to emphasize more text-based tools (EdmodoDocs) that elicited extended written responses.

The task analysis also showed that all the mentors used VoiceThread to design tasks that had the purpose of promoting mentees’ oral proficiency in English for conversational purposes. These VoiceThread tasks typically involved an initial mentor video post modeling the language skill and asking the mentee to do the same; a follow up mentee video post engaging in the language skill, and a final mentor video post offering feedback on mentee’s performance. In these VoiceThread tasks, mentors typically offered oral directions, presentation slides, vocabulary supports, relevant visuals, and embedded texts addressing the topics. Mentees read...
the slides and the embedded text and communicated with mentors orally and in writing. beginner mentees through the Quizlet based vocabulary and sentence stems tasks.

Additionally, all mentors used Zaption to create tasks that had the purpose of promoting mentees’ listening comprehension skills in English. More specifically, mentors addressed mentees’ ability to understand English words and quotes in context, to understand what was said in a video and make inferences based on it, and to make personal connections with the content of the video to enhance their understanding. To this end, mentors’ Zaption language learning tasks typically involved a YouTube video that was segmented into meaningful sections (between three and nine) and that had one or multiple listening comprehension questions after each section. Mentors selected YouTube videos that were related with social studies content standards 49% of the time and with mentees’ interests 51% of the time. Videos related with mentees’ interests included mentees’ favorite songs and movies (33%), artists and celebrities (28%), and sports and athletes (22%). In all Zaption language learning tasks, mentors supported mentees by offering an audiovisual context to understand English, segmenting audiovisual information in meaningful ways, and allowing students to see videos repeatedly. Also, depending on mentees’ English proficiency levels, mentors embedded different types of comprehension questions in the Zaption language learning tasks including yes or no questions, multiple choice questions, and open ended questions. The fact that more than half of the Zaption language learning tasks addressed topics that were familiar and interesting to mentees was also a relevant support.

**Acting on Affordances**

*Research question #2: In what ways did the mentors and mentees act upon the affordances of these tools to accomplish particular communicative purposes? The next phase of analysis focused on the actions that mentors took when using particular tools by asking how*
mentors framed the affordances of the audiovisual and text-based interactional modes. We examined how those framing orientations helped them accomplish particular interactional objectives how they oriented their messages as interactional or didactic.

**Interactional orientations.** In the first phase of this analysis, we coded interactional purposes in one of three ways across all Edmodo feeds to reflect three ways that partners oriented themselves to one another: 1) didactic, with a primary focus on task logistics and mentor-driven directives; 2) interactional, with a primary focus on building relationships, and 3) combined, which achieved a focus on the task through relationship building. Figure 3 displays an analysis of these three orientations as organized by partnership across the four proficiency levels (B=beginner, I=intermediate, A=advanced, and AH=advanced high).

![Figure 3. Total Frequency of Text-Based Posts by Interactional Orientation.](image)

The most salient finding from this analysis, with the exception of the two beginner-level student partnerships, is the frequency with which mentors engaged with their mentees using a more informal, interactive orientation (through interactional or combined orientations). The data indicate that mentors used the Edmodo feed as a starting place to engage in conversations to get
to know their mentees’ by asking them about their hobbies, interests, and backgrounds. Also, regardless of the task purpose or topic, mentors tried to make personal connections with mentees (with intermediate proficiencies or above) and to motivate them to participate online before explaining what they were expected to do or posting their language learning tasks. In short, they built an interpersonal relationship inside the Edmodo feed and used the information from the mentee to then guide which types of pedagogical tasks to develop.

Mentors used several strategies to demonstrate their personal interactional orientation. One way was through peer-like discourse—characterized as being informal and friendly, often with emoticons included. Examples in Table 4 show four other strategies: being personal, demonstrating interest in the mentees’ postings, connecting with their background, and asking their opinions. Mentors who connected personally or academically with mentees tended to be younger and to have less experience teaching English language learners. In their personal reflections, they positioned themselves as learners by discussing their limited experience and their professional interest in learning to work with English language learners.

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Description</th>
<th>Excerpts from Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Being “personal” online</td>
<td>Mentors shared personal information or personal pictures</td>
<td><strong>Mentor:</strong> “Thank you for sharing M----! My favorite place to go is to my family's farm in Washington State. The picture of the barn is on my family's wheat farm. “</td>
</tr>
<tr>
<td>Demonstrating interest in mentee’s postings</td>
<td>Mentors made comments or asked follow-up questions about mentee’s postings.</td>
<td><strong>Mentee:</strong> “I LIKE TO GO TO HBJ STADIUM. I WANT TO GO TO ORLANDO CITY TO PLAY SOCCER. YOU SHOULD GO TO WATCH THE WORLD CUP.” <strong>Mentor:</strong> “Wow! You really like soccer. Do you play soccer at your school?” <strong>Mentee:</strong> “YES I DO I MADE IN MY FRESHMAN YEAR.”</td>
</tr>
</tbody>
</table>
Connecting with mentee’s background

Mentors asked mentee to connect content taught with their personal experiences.

**Mentor:** “Last week I made you a lot of activities about JFK. This week I want YOU to teach ME about someone important from India! I cannot wait to learn about the person you choose!

Requesting mentee’s feedback

Mentors asked mentees if they liked an activity or if they found it difficult or easy.

**Mentor:** I also made this video that will show you more about Malala, and has some questions to show me what you learned. If there's something you don't understand or do not know, please tell me!

**Interactional chains.** The question of how mentors oriented themselves to their mentees is whether or not the stance they took (didactic, interactional, or combined) manifested in sustained discussion around particular topics. That is, did mentors and mentees achieve conversational threads that persisted over a single initiation and response? Figure 4 provides an overview by partnership of the percentage of total Edmodo feed posts that resulted in interactional chains of three or more postings on the same topical thread.
As this chart demonstrates, the beginner mentees had no instances of sustained conversations around particular topics. Mentors of beginner-level students instead used Edmodo as a jumping off point to encourage them to engage with specific, targeted language learning activities on ReadWriteThink.org, Quizlet, or VoiceThread that helped enhance their fluency with particular word fields (e.g., early literacy games) and grammatical structures (e.g., listening and repeating sentence stems and using them in a conversation or interview). The degree to which other partnerships managed to sustain topic-driven conversations within the text-based Edmodo feed was low, with chains resulting in no more than 32 percent of their overall posts.

We examined the beginnings of the interactional chains to explore what might initiate a more extended conversation between the mentors and mentees. We found that mentors and mentees used different engagement triggers to elicit a response from their online partner. For example, mentors who made a personal connection with their mentees or made a connection between mentees and their assigned language learning tasks were more likely to develop sustained interactions. Due to these personal connections, mentees felt highly motivated to continue the Edmodo conversation or to comment on the language learning task after completing it. For example, Edmodo conversations around mentees’ hobbies (e.g., playing soccer or reading) and Zaption based language learning tasks involving YouTube videos of mentees’ favorite movies (e.g., Stuart Little short video), music (e.g., Taylor Swift song video), or sports (e.g., biography of soccer player Leonel Messi) tended to create strong personal connections with mentees and trigger interactional chains. In several cases, mentors shared personal information about themselves, such as feelings, dreams, memories, or personal pictures.
The interplay between technology affordances and pedagogical intent. Research question #3: In what ways did mentors align the selection of affordances with particular pedagogical purposes? In this section, we examine how mentors actively engaged with the properties of the different affordances of the tools designing language learning tasks that resulted in different types of mentee engagement.

We found that mentors’ choices of how to orchestrate the use of different tools manifested in quite different outcomes, with two main categories emerging to characterize the mentors as those who created fluidity spaces, and those who created task silos. First, fluidity spaces were characterized by seamless movement across text-based and audiovisual tools during the enactment of a single language learning task or set of thematically linked language learning tasks. Mentors who created such fluidity spaces tended to share several characteristics: they were themselves more confident in their use of the technologies, they tended to build more interactional chains with their mentees, they understood how to connect language learning tasks to “build on each other” (e.g., going from listening about a topic to reading about it or going from practicing single sentences about food to put them together in a food interview task), and they directed their language learning tasks toward topics relevant to the interests of their mentees. The majority of these fluidity spaces also integrated a wider range of language learning strategies (e.g., using cloze-gap listening activities, using clear, predictable oral text, using model texts, promoting noticing of text features, focusing on form).

The following episode provides an example of a fluidity space, as Amy, the mentor, worked with Karen, her beginner-level mentee, who had limited English proficiency and limited native language (Spanish) literacy skills. As seen in Table 5, Amy used four different tools (Edmodo Feed, VoiceThread, Edmodo Docs, and Quizlet) and different meaningfully connected
language learning tasks to lead Karen through a full cycle of instruction around the successful introduction of new vocabulary through the use of these new words in a scripted interview and formative feedback on her performance. In these tasks, it is visible how Amy used VoiceThread to model how to use clear oral text format to talk about food, and after that, used Quizlet to give the beginner mentee opportunities to practice related English sentences repeatedly. Finally, Amy used the VoiceThread platform to give feedback to the mentee on her performance.

Table 5. Example of a Fluidity Space Created for a Beginning-Level Mentee.

<table>
<thead>
<tr>
<th>Tool</th>
<th>Pedagogical Activity and Strategy</th>
<th>Excerpts from Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edmodo Feed</td>
<td><strong>Reading</strong>: Brief greeting with hyperlink to VoiceThread (modifying input in written communication)</td>
<td>“Interview about hobbies Hello M---! Watch how I interviewed my friend L--. Please do the same with a teacher. <a href="https://VoiceThread.com/#thread/">https://VoiceThread.com/#thread/</a>. Buena suerte!”</td>
</tr>
<tr>
<td>VoiceThread</td>
<td><strong>Listening</strong>: The mentor models an interview with a friend. (Using clear, predictable oral text; using sentence stems for syntax recognition; providing models)</td>
<td>[In a 50-second clip, the mentor introduces the activity in Spanish, then models the interview with a friend.]</td>
</tr>
<tr>
<td>Edmodo Doc</td>
<td><strong>Reading</strong>: Interview script downloaded (Eliciting output with multiple scaffolds; using repetition to reinforce key vocabulary)</td>
<td>“Thank you. What is your favorite <strong>salty</strong> food? What is your favorite <strong>sweet</strong> food--<strong>dessert</strong>? What is your favorite <strong>drink</strong>? What food do you not like at all?”</td>
</tr>
<tr>
<td>Other: Quizlet</td>
<td><strong>Reading, listening, and speaking</strong>: Mentee practices vocabulary and syntax with interactive online exercises (Providing aural and visual stimuli Eliciting output in complete sentences)</td>
<td></td>
</tr>
<tr>
<td>Other: Face-to-face interview with classroom teacher</td>
<td><strong>Speaking and writing</strong>: Mentee uses interview script to conduct interview with teacher (Eliciting output with multiple scaffolds)</td>
<td></td>
</tr>
<tr>
<td>VoiceThread</td>
<td>Speaking and listening: Mentee conducts interview on VoiceThread with a teacher (Using model texts, eliciting output)</td>
<td></td>
</tr>
<tr>
<td>-------------</td>
<td>---------------------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Edmodo Feed</td>
<td>Reading: Mentor provides written and verbal feedback on activity (Providing explicit and connected feedback; promoting noticing)</td>
<td></td>
</tr>
</tbody>
</table>

On the left side of this screen shot are icons that link to a video of Amy providing feedback on her mentee’s final interview.

This example contains hallmarks that are shared by other fluidity spaces created by most mentors, regardless of their mentees’ English proficiency. In this particular case, the entire activity was designed as a single, two-week unit on conducting interviews. Amy had accurately diagnosed her mentee as having very low fluency in English, as well as low home language (Spanish) literacy. She therefore kept her written Edmodo feeds short and personal (“Watch how I interviewed my friend. . . Buena suerte!”). She uses Spanish as a way to encourage and align herself with Karen, and she demonstrates her interest in Karen and her engagement with the online mentoring project by investing large amounts of time in creating individualized Quizlet activities designed for Karen. As pedagogical tools, the Quizlet activities resembled basic flashcard drills of key vocabulary words and sentence starters. However, because they were authored specifically for Karen and used Amy’s voice for the pronunciation guide, they created a deeply personal space for Karen. Field notes of the site observations documented that Karen reviewed these cards for over 30 minutes, and in her interview she indicated they were one of her most valued activities. In sum, Amy demonstrated her pedagogical competence at integrating a variety of tools to complement the range of pedagogical strategies she used to engage and support Karen.
In contrast to the fluid movement created across tools in the above example, other mentors designed what we refer to as task silos, exemplified by a checklist approach to online activity development and completion. In these cases, mentors drew clear boundaries around tasks, such that each activity existed without explicit connections to other tools, tasks, or topics. In the majority of such cases, the tasks themselves were pedagogically well designed and appropriate for the English proficiency of the mentee. However, they missed the opportunity to make connections across language modes—which arguably manifested in missed opportunities to develop English comprehensively and to develop the type of interpersonal connections that could be sustained in an asynchronous interactional environment. A salient example of this type of task silo is presented below, in an episode in which a mentor (Carolyn) used two different online modes in the same interaction session: Zaption and Storybird. Zaption was used to address the topic of a biography of John F. Kennedy, while Storybird was used to complete a story about a raccoon. The raccoon topic neither emerged from the mentee’s comments and interests, nor was it in any way connected to the life of John F. Kennedy. Through the raccoon activity, the mentor offered the English learner student an opportunity to write in English, while missing an opportunity to engage the mentee in writing about the content topic that he was addressing.

**Mentor Reflections on their Mentees and the Medium**

Research question #4: How did the affordances of the technologies influence the mentors’ understandings of their mentees? The different technology options of the medium for communication played a role in how mentors engaged with their mentees. First, as a consequence of being able to use different online tools, mentors could develop a more comprehensive perspective of the English skills of their mentees (i.e., listening, speaking,
reading, and writing) and more awareness of how mentees’ skills within the different language modes impacted their participation in the online program and their learning needs.

Voice Thread is great because it’s video. I think the ELLs really like that…When you’re learning a new language, the reading and writing can be hard, so just being able to talk in a more, almost natural way and watching and looking at who you’re talking too and also, they can take their time or re-record what they’re saying, prepare themselves to send it.
—Stephanie (Mentor)

My experience mentoring through the use of online technology has allowed me to navigate a variety of online forms of communication. Through my time working with my mentee, I have discovered that some online forms are better suited for communication than others based on the language level —Anthony (Mentor)

As Anthony (above) suggests, “after navigating a variety of online forms of communication,” he was able to understand that even when his mentee had an overall label of intermediate proficiency level in English, his mentee had differentiated proficiency levels across the skills: advanced in English listening and speaking, intermediate in English reading, and beginner in writing. Therefore, although it was easier for the mentee to participate in language learning tasks that mainly involved oral language, he needed more support to improve his writing and to complete writing tasks.

Additionally, we found that the audiovisual options afforded by this exchange encouraged mentors to imagine their mentees holistically as youth, not only as English learners. Initially, most mentors discussed their mentees in their reflections only in terms of their level of English proficiency and the support that they would need during the program. However, immediately after “meeting” their mentees face-to-face using the audiovisual option, mentors like Janet (quoted below) imagined their mentees’ interests, background experiences, and attitudes towards learning as assets that were not conditioned by their English proficiency and that could be leveraged during the online interaction for language learning purposes:
I have learned that he is very serious about his studies. This being the case, I have recently presented him with denser activities that include slightly heavier text and analytical tasks. At first, I was worried about making the activities too academic, but George has responded very well and seems to be interested. Indeed he is!
—Janet (Mentor)

Other mentors extended how they imagined their mentees to include their emotional needs and calibrated their choices of interactional tools to be sensitive to these differences:

For me, it (the best online tool) was definitely Zaption…I had a student that was very shy and didn’t want to read in front of the cameras and didn’t want to talk on the videos, so I think for her, having something very structured like that was the best way to help her.
—Amanda (Mentor)

Mentors who optimized the opportunity to imagine mentees in this more multidimensional and holistic manner tended to be those who positioned themselves as learners, interested in developing their pedagogical competence teaching ESL, or those who explicitly wrote in their reflection journals about the importance of developing a personal relationship with their mentees.

Discussion

Affordances of Text-Based and Audiovisual Tools

This project examined the interactional choices that graduate student mentors made when given the background training and implementation autonomy to use a range of technology-based tools and to select from an array of tools as they mentored adolescent ESL students. We found that the majority of the partnerships were characterized by a preference for audiovisual modes. The properties of VoiceThread, in particular, allowed mentors to communicate with a wider range of linguistic supports—gestures, facial cues, images, and speech. When designing language learning tasks, mentors used VoiceThread to create tasks in which they could use oral language in asynchronous ways, could model specific uses of speech, and could assess students’ oral performance by requesting students’ verbal performance as part of the tasks. Mentees also reported that they “felt physically closer” to their mentors and that they valued, in particular, this
time investment in the audiovisual option for communication. In the weekly sessions, the difference between a quickly typed note in the Edmodo feed and a more elaborated audiovisual experience was noticed by the English learner mentees and led to the fostering of stronger interpersonal connections.

The properties of Zaption allowed mentors to engage with the repertoire of social interactional and cultural tools that were familiar to their mentees. By drawing on popular YouTube videos to develop language learning tasks, the mentors demonstrated a willingness to step into the worlds inhabited by their mentees. The videos were used primarily to build on information that the mentees had conveyed in their Edmodo feed, dealing with topics such as favorite movies, music groups, and sports events. The affordances of the primarily text-based Edmodo platform functioned well as an organizational tool for both mentors and mentees. Because the layout approximated the popular social media platform of Facebook, it offered a shared platform that was immediately familiar to both groups.

**Interplay Between Proficiency Level and Tool Use**

From the small number of participants in this project, it appeared that, at least with this group of high-school-aged learners, learners’ language proficiency levels in part shaped the ways that mentors engaged with tools to create language learning tasks. For the beginning-level students, audiovisual options were key in providing multiple cues to support communication. In addition, the ease with which mentors could create personalized language learning activities for their students around particular word fields and grammatical structures permitted mentees to engage with language drills within the more enveloping context of a multimodal, multi-layered social relationship. For high-intermediate and advanced learners, mentors gravitated toward the combined use of audiovisual tools and task-oriented comprehension worksheets that asked
mentees to produce academic written text. Zaption was drawn upon by all mentors to offer familiar video-based activities that scaffolded understanding and that held mentees accountable for their participation in the language learning task.

Mentors’ *technology proficiency* levels, not only mentees’ language proficiency levels, arguably shaped the ways in which mentors engaged with different tools and tasks. Depending on their familiarity with technology, mentors drew upon resources generating that demonstrated differences in their proficiency with building coherence *across* language learning tasks, which we described as the difference between creating fluidity spaces or task silos. The transfer of pedagogical strategies from the face-to-face context to the online context is not always intuitive. Explicit support in connecting tools to language scaffolding requires attention to integration across platforms, modes, skills, content, and context. Using online mentoring programs in teacher education programs as spaces for modeling and scaffolding this integration can support educators in developing the expertise to transfer to other teaching contexts.

Finally, mentors and mentees who demonstrated the willingness to imagine their partners as more than just distally located individuals accessible through a mediated platform. When interactions, activities, and messages were oriented specifically to their partners as individuals with a sense of immediacy to the interaction made possible through the audiovisual tools, mentors created more successful partnerships. They anchored their relationships in evidence from the communication itself by drawing on the Edmodo postings of their partners, by layering in multimodal video messages, and by offering up multi-faceted artifacts from their lives (personal photos, anecdotes, talking head videos, etc.). Mentors and mentees in this online mentoring program never met face-to-face. And yet, many of them were able to imagine one
another, with the support of text-based and audiovisual tools, as multidimensional learners with linguistic, social, and emotional strengths and needs.

From this online project, we would argue that the audiovisual options enhanced the ability for mentors and mentees alike to be more cognizant of one another. The immediacy of the audiovisual media afforded an intimacy through voice, gesture, facial expressions—which signaled partners’ interest and sincerity. Although the multimodal platform had limitations, it also allowed for a level of interactional intimacy that teachers often find difficult to achieve even in face-to-face teaching. In large classes, for example, it can be challenging to develop strong one-on-one relationships with all students at the same level of detail and depth as was possible in this one-on-one online exchange. Therefore, one of the strengths of online mentoring programs for teacher educators, particularly those who are working with prospective language teachers, is to allow for a set of engaging interactional experiences. These experiences foreground the complex “worlds” of English language learners. Through online mentoring that draws, in particular, on audiovisual tools, language teachers can become more aware of the interplay across learner type, proficiency level, tool properties, and pedagogical strategies. Teachers can also develop their skills in building relationships with their students through the design of tasks that enhance the sense of proximity and immediacy of another their online partners.
References


Schools are increasingly turning to technology in efforts to transform learning and connect with students and families (Nogueron-Liu, 2017; U.S. Department of Education [USDOE], 2016). In urban, high-poverty contexts, technology initiatives also hope to ameliorate long-standing inequities in the access to and use of technology—historically known as the “digital divide” (Attewell & Battle, 1999; Katz & Gonzalez, 2016). By providing low-income families with new ways to learn alongside their children, hardware, software, and digital connectivity can promote, enhance, or extend how parents invest and interact in their children’s education (USDOE, 2016). In addition to the increased use of technology, U.S. schools are serving a rising percentage of Latinx students (19% in 2004 versus 25% in 2014)—and 70% of them speak a language other than English at home (National Center for Education Statistics, 2018; Pew Research Center, 2008). Yet, we still know little about how technology shapes parental engagement, the process of how and why parents participate in their children’s schooling, particularly for low-income Latinx families (Calabrese Barton, Drake, Perez, St. Louis, & George, 2004; Katz & Gonzalez, 2016; Nogueron-Liu, 2017). The purpose of this qualitative case study is to explore Latinx parent engagement at an urban, high-tech elementary school. In particular, we focus on the role of technology and language resources in shaping engagement.
To situate our study, we discuss the shift from parental “involvement” toward “engagement.” We then explore scholarship on Latinx family engagement and what is known about technology for family-school relations—particularly with Latinx families.

**Conceptualizing Engagement**

*Parental involvement*, which lacks a singular definition, is credited with increased attendance, higher achievement, and better postsecondary outcomes (Calabrese Barton et al., 2004; Epstein, 2011). Although not uniformly applied, in urban, high-poverty contexts, involvement has historically been used in deficit-based ways—positioning parents as passive and reflecting the school’s agenda rather than families’ needs, interests, and knowledge. Parents either do the types of things *involved* parents should do—as sanctioned by schools (e.g., overview homework, fundraise, attend events)—or they damage their children’s educational chances. Conventional examples of parental involvement can reflect what middle-class Whites are already doing while overlooking ways (e.g., giving advice and moral support) that are often used by non-dominant\(^1\) groups, such as Latinx families (Calabrese Barton et al., 2004; Hong, 2011; López, Scribner, & Mahitivanichcha, 2001).

Although all parents value education, low-income non-dominant families can face barriers when attempting to participate in ways typically promoted by schools (Epstein, 2011; Lareau, 1987). Across race and ethnicity, low-income parents might feel uncomfortable at school or lack confidence or skills to assist with homework. They may struggle to arrange childcare or transportation or maintain phone or Internet access (Hollingworth, Mansaray, Allen, & Rose, 2011; Lareau, 1987; Pavlakis, 2018). Schools can also hold deficit views and have discriminatory practices that restrict relationships (García & Guerra, 2004). Given the extensive

\(^1\) We use “non-dominant” to refer to racial, ethnic, and linguistic groups that have been systematically marginalized by schools.
barriers and power dynamics inherent in conventional notions of involvement, de Carvalho (2001) even questioned the desirability of policies mandating it.\(^2\)

Other scholars have rejected conventional notions of involvement or proposed different discourses that aim to better position low-income non-dominant families in urban, high-poverty settings (e.g., Baquedano-López, Alexander, & Hernández, 2013; Fine, 1993; Ishimaru et al., 2016). While not without its own critiques, *engagement* tries to capture families’ diverse roles in their children’s learning (Goodall & Montgomery, 2014). Discussing the difference between *involvement* (as conventionally applied) and *engagement*, Calabrese Barton and colleagues (2004) declare, “involvement has been used to describe things parents do” while engagement aims to move “beyond an individual and his or her participation in an event…[to also] include the situation or contexts that surround an individual’s decision to participate…” (p. 4). We use *engagement* because it is broader, allows us to focus on “the hows and whys” of participation, and considers parents (and their decisions and actions) in relation to their environment (Calabrese Barton et al., 2004, p. 3).

**Latinx Engagement**

Embedded in a school system where power is typically held by the White, English-speaking, middle class (Ladson-Billings & Tate, 1995), Latinx families are an ethnically, socioeconomically, and linguistically diverse group who can face barriers to conventional involvement shaped by factors such as their social class, ethnicity, or English language proficiency (de Gaetano, 2007; Torres & Hurtado-Vivas, 2011).

Latinx parents who are uncomfortable with English often struggle to communicate with schools. Even when schools translate, poor translations may lead to miscommunication (Colina

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\(^2\) See Goals 2000; Title 1 (de Carvalho, 2001; Epstein, 2011).
Educators’ deficit views of Latinx families can also negatively interfere with family-school relations. Wassell, Hawrylak, and Scantlebury (2017) noted that even when teachers recognized barriers for Latinx families, they still claimed parents needed to do more to help their children. Research suggests that teachers and administrators can promote participation by developing their own awareness of educational inequities, recognizing families’ assets, and treating parents as partners (de Gaetano, 2007; Hernández & Endo, 2017; López, 2017; Weisman & Hansen, 2008).

Despite deficit narratives, Latinx parents play important roles in their children’s schooling. Durand (2011) found that Latinx mothers tend to frame education as a set of moral, interpersonal, and academic goals. Alternative forms of participation often emphasize advice and moral support (Auerbach, 2006; Holloway, Park, Jonas, Bempechat, & Li, 2014) and can be nearly as impactful on achievement as normative forms such as reviewing homework (LeFevre & Shaw, 2012). Latinx parent advice is frequently motivated by hardships and stresses the role of education, persistence, hard work, maintaining respectful relationships, and interdependence (familism)—rather than direct advocacy (Durand, 2011; Holloway et al., 2014). Latinx parents may rely on these alternative forms of participation due to experience, language, immigration status, or beliefs that their children are better suited to advocate for themselves (Auerbach, 2006).

Technology, Family-School Relations, & Latinx Families

Much of the research on technology, families, and schools focuses on school-to-home communication (Pollock, 2013). For instance, Olmstead (2013) found that teachers and parents preferred unidirectional methods (e.g., websites) for delivering information but bi-directional platforms (e.g., calls, texts, emails) for specific student concerns. However, emerging literature
frames technology as more than just a substitute for traditional communication methods; it tends to suggest that technology can support parents’ capacity for participating in their children’s education (Pollock, 2013; Rivera, 2014; York & Loeb, 2017).

Technology may be a particularly useful engagement tool for low-income Latinx families. Mitigating historic patterns of socio-economic inequities in access to technology for lower-income schools and families may help to better connect low-income Latinx parents to their children’s schooling (Attewell & Battle, 1999; Katz & Gonzalez, 2016; Nogueron-Liu, 2017). Building off the Latinx emphasis on familism, technology-based educational projects could enable families to learn together—irrespective of educational background (Durán, Durán, Perry-Romero & Sánchez, 2001). By allowing parents to communicate with students more easily or opportuneely (e.g., immediately before an important test), technology could enable parents to increase their moral support. Moreover, with increased access to what is happening at school, parents may be better able to provide relevant and timely advice.

Research documents Latinx access to personal and educational technology (Fuller, Lizárraga, & Gray, 2015). Some work suggests that Spanish-only families have less access to digital technology than bilingual or English-only Latinx families (Farlie, 2007). On its own, however, even universal access to technology would not suffice because technology use (e.g., entertainment versus personal development/research) also varies by socio-economic status, gender, and race. Owning a computer, for example, benefits all student groups. However, reflecting differences in use, for boys, Whites, and students from higher socio-economic households, it is associated with greater academic gains (Attewell & Battle, 1999).

Helping to explain differences in access and use, Katz and Gonzalez (2016) found that macro (national) and meso (community) factors influenced how low-income Latinx parents
weighed the benefits and risks of incorporating new technologies into their homes. Likewise, Tripp (2010) found that Latinx immigrant parents worried about online safety but recognized the educational value of the Internet. Consequently, Latinx students had occasional Internet access for homework but few opportunities for online exploration. In her study of digital access, use, and perspectives of eight Spanish-dominant immigrant parents in a school undergoing a 1:1 laptop initiative, where each child had a laptop to use at school and home, Nogueron-Liu (2017) found that parents’ decisions to accept school-sanctioned devices into their homes were shaped by pre-existing household practices and their perceived role in their child’s moral education.

While such work illuminates why and how Latinx families accept and use technology at home, limited research explores how digital tools mold relationships between Latinx families and schools (Nogueron-Liu, 2017). Durán and colleagues (2001) found that a computer project where Latinx immigrant parents and children published together not only connected family members, teachers, and community members, but also enabled parents to develop their own computer skills and engage with their children’s literacy. Other research has found that Latinx immigrant youth serve as technology brokers—bringing home what they learn in school (Sánchez & Salazar, 2012). However, more research is needed that explores the role of technology and language in shaping relationships between Latinx families and schools and that deepens understandings of how and why Latinx parents engage.

**Research Questions**

Our research team included a full professor, two assistant professors, and a graduate student. Three are fluent in Spanish; one identifies as Latinx and is a foreign-born native Spanish speaker, and the others are White. All are parents and former K-12 teachers. Garnering insights from Stake (1995), we began with an etic (researcher/outsider-driven) question (RQ1) and later
added a second question (RQ2). At a high-tech, urban elementary school, we asked:

RQ1: How do resources and norms around technology and language shape Latinx parent engagement?

RQ2: How does Latinx parent engagement manifest within and across different spaces of the school?

**Conceptual Framework**

In addressing our research questions, we drew insights from Calabrese Barton and colleagues’ (2004) *Ecologies of Parental Engagement framework in urban education (EPE)*. With roots in Cultural-Historical Activity Theory and Critical Race Theory (CRT), EPE argues that instead of focusing narrowly on what parents do to participate in school (conventionally referred to as involvement), we should also value how parents make sense of their engagement in regard to their experiences and actions (Roushias, Calabrese Barton, & Drake, 2009).

EPE frames parental engagement as a process that is relational and dynamic (see also Torres & Hurtado-Vivas, 2011). An EPE perspective considers not only what parents might do (e.g., attend events), but also the macro (e.g., policies and social messages) and micro-context (e.g., an individual’s relationships and interactions with others) that help shape decisions. EPE posits that “parental engagement cannot be the individual actions of parents taken alone, but parents interacting with other parents, teachers, and other school-and-community-based people within particular spaces” (Calabrese Barton et al., 2004, p. 6). These spaces may be outside the school (home/community), school-based and academic (e.g., science classroom), or school-based and non-academic (e.g., bake sale). Spaces become defined by people, their roles (division of labor), tools used (e.g., curriculum, laptops, microscopes), and artifacts produced (e.g., decisions
or products). Within each space, unique sets of ideas or constructs may be valued (Calabrese Barton et al., 2004).

As shown in Figure 1, engagement becomes the “mediation between space and capital by parents in relation to others in school settings” (Calabrese Barton et al., 2004, p. 6). Drawing upon Bourdieu (1977) and Spillane, Diamond, Walker, Halverson and Jita (2001), capital in EPE is defined as “the human, social, and material resources one has access to and can activate for their own desired purposes” (Calbrese Barton et al., 2004, p. 5). Bourdieu’s work is often used to examine how upper-and-middle class families use conventional resources (e.g., knowledge, social contacts) as cultural and social capital—aiding parental engagement. EPE foregrounds how capital can also be created “out of resources or situations where status quo norms generally only recognize a deficit” (Calbrese Barton et al., 2004, p. 9). In EPE, a parent who may have limited conventional resources may be able to activate other resources, such as resiliency, to aid them in engaging. Capital is helpful in EPE because it captures how varied parental resources, can sometimes be used to garner advantages—depending on the space. Namely, parents’ resources are molded by the interactions around these unique people, roles, rules, tools, and artifacts that both permeate and define each space (see Figure 1). Based on these interactions, parent engagement, as the “mediation between space and capital” (Calabrese Barton et al., 2004, p. 6), may manifest differently in science than it does in math, art, fundraising, or school celebrations. This conceptualization stands in contrast to conventional definitions of parent involvement, where involvement is an outcome of an individual parent’s specific actions (i.e., parent attends school events so parent is involved and parent involvement happened).
Actions that facilitate engagement as mediation include authoring and positioning, “how parents activate the resources available to them in a given space in order to author a place of their own in school and how they use or express that place to position themselves differently to influence life in schools” (Calabrese Barton et al., 2004, p. 8). Presence, which emerges as a form of parental engagement in EPE, is framed as purposeful by parents because it can foster opportunities to observe their children and their teachers, address problems as they occur, or enrich their own learning, allowing parents to “becom[e] a part of the fabric of the school” (Calabrese Barton et al., 2004, pp. 7). Stemming from their desire to help their children, parents’ orientation to action, such as their concerns and questions about educational inequities, also proves important. Thus, Calabrese Barton and colleagues note: “parental engagement is a desire, an expression, and an attempt by parents to have an impact on what actually transpires around
their children in schools and on the kinds of human, social, and material resources that are valued within schools” (p. 11).

EPE was helpful to this study for multiple reasons. First, little work had previously applied EPE to Latinx engagement and technology. Second, it was broadly applicable to RQ1 and RQ2 because it highlighted the limitations of using involved as a static adjective to describe individual parents. Further, it allowed us to more deeply understand the sites (i.e., the spaces) where engagement occurred (RQ2) and provided organizational insights into how we presented our findings.

**Context**

Located in a large metropolis, Sunnyhill is a technology-focused, secular, non-profit, private urban elementary in the Southwestern United States. While law requires the nearby public schools to offer bilingual education in Spanish, at Sunnyhill, instruction is in English and most educators are monolingual. Nearly all families live within a 5-mile radius of the school in a low-income, majority Latinx neighborhood. Ninety-five percent of students identify as Latinx, 4% as Black, and 1% as White. Thirty-eight percent of Sunnyhill families speak Spanish at home, 44% English, and 18% are bilingual (Spanish/English).

*Urban* can signal “high density” or “high poverty,” and is sometimes even used to describe a setting serving mostly non-dominant families (see Milner, 2012). Compared to the urban public district, Sunnyhill serves a similar percentage of low-income families (85% free/reduced lunch) and a higher percentage of Latinx students (95% versus 70%). Yet, while a foundation—which owns and operates the school—fundraises and covers operating costs, Sunnyhill families pay sliding-scale tuition and are interviewed before admission.
At Sunnyhill, 98% of students graduate high school and 82% enroll in college. Students take the same standardized exams as public students—and outperform them (85% satisfactory or above in math and reading versus 61% and 58% in the district). Local newspaper articles attribute Sunnyhill’s success—at least in part—to parental buy-in. On their website, Sunnyhill prides itself on “deep parent engagement.”

Furthermore, Sunnyhill aims to use technology to transform learning; it has a set of “digital values” and report cards include “digital citizenship.” The school has its own Twitter feed, and many teachers have classroom feeds. Sunnyhill sends families text messages and posts on Facebook. Nearly all families have a smartphone and Internet access at home (95.9% and 95% respectively), while 85% have a computer and 84% a tablet. Sunnyhill was an ideal setting and an instrumental case because it served a high proportion of low-income Latinx students and allowed us to glean rich insights into parent engagement, language, and technology.

**Methods**

Qualitative case studies are well suited for “how” or “why” questions aiming to understand a bounded case such as Sunnyhill (Creswell, 2007; Stake, 1995). Part of a larger investigation of a 4G-tablet initiative at Sunnyhill, we spent eight months collecting wide-ranging data—all bounded by the school community (see Creswell, 2007). Our data collection and analyses were ongoing, interactive processes conducted in two phases (Stake, 1995).

**Phase I**

Guided by RQ1, Phase I captures our first month of collection and analysis. Here, we gathered and analyzed over 50 Sunnyhill documents (in English and Spanish) relevant to family and school communication, including virtual school blogs, Twitter feeds, and Facebook posts, as well as physical school reports, handbooks, and flyers. We also moderated four parent focus
groups (in English and Spanish) and one teacher focus group (see Table 1 for sample protocol questions). Once completed, interview data was translated, transcribed, and uploaded to NVivo 11, a qualitative software analysis program.

Table 1

*Sample focus group/interview protocol questions, aligned to research questions, by subgroup.*

<table>
<thead>
<tr>
<th>Parents</th>
<th>School Leaders</th>
<th>Teachers</th>
<th>Students</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RQ1: How do resources and norms around technology and language shape Latinx parent engagement?</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What is the primary language spoken in your home?</td>
<td>Many Sunnyhill families speak Spanish. How do you think language might shape Sunnyhill families’ educational experiences?</td>
<td>How do your language skills influence your relationship with parents? Can you please give an example?</td>
<td>Do you know Spanish? When do you use it?</td>
</tr>
<tr>
<td>If bilingual, where and when do you use each language?</td>
<td>Tell me about the ways in which technology facilitates family-school relations.</td>
<td>How comfortable are you using technology in your own life? As a teacher?</td>
<td>How do you use technology at home? At school?</td>
</tr>
<tr>
<td>In your opinion, how does Sunnyhill see Spanish?</td>
<td></td>
<td></td>
<td>Who helps you with technology?</td>
</tr>
<tr>
<td>In your opinion, how comfortable are you using technology?</td>
<td></td>
<td></td>
<td>Who do you help?</td>
</tr>
<tr>
<td>Tell us about a problem you had with technology and how you resolved the issue.</td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>RQ2: How does Latinx parent engagement manifest within and across different spaces of the school?</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How comfortable do you feel in (the classroom, parent center, etc...)? Why?</td>
<td>Tell me about Sunnyhill and the families it serves.</td>
<td>During the school year, what are some practices that you use to coordinate the support of students’ educational, social, and emotional</td>
<td>Let’s talk about the parts of your day and who helps you… (e.g., commute, class, lunch, afterschool &amp; homework routines)</td>
</tr>
<tr>
<td>What do you do in the (classroom, parent center, etc.)?</td>
<td>Tell me about how you view Sunnyhill’s relationships with families.</td>
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</table>

Tell me about Sunnyhill and the families it serves. | During the school year, what are some practices that you use to coordinate the support of students’ educational, social, and emotional | Let’s talk about the parts of your day and who helps you… (e.g., commute, class, lunch, afterschool & homework routines) |
MRS IN TEACHER EDUCATION

| Why do you participate in this way specifically? With whom do you participate? | Tell me about the ways in which families get involved in the different spaces of the school (such as the parent center, cafeteria, etc.). What are Sunnyhill’s goals going forward in how it works with families? | What are Sunnyhill’s goals going forward in how it works with families? What are the different ways in which families can get involved in your current classroom? |

Aligned to our epistemological research question (RQ1), analysis began with an inductive, initial open coding process that allowed themes to emerge from data (Saldaña, 2016). Working individually, we engaged in a slow, line-by-line reading of the transcripts and key documents. For all documents, we also employed descriptive coding to note the basic topics covered (Saldaña, 2016). In weekly team meetings, we checked for alignment in open coding by reviewing transcript samples. Based on our inductive analysis, we noted that the site of engagement emerged as important—parents and teachers commonly framed discussions of engagement within specific places such as the cafeteria and classroom.

At this point, our research focus evolved (see Stake, 1995). We decided that a second, distinct but interrelated research question (RQ2) was needed to deepen our understanding of the case. Informed by Phase I, we also drew additional insights from EPE as we continued collecting data—modifying interview protocols to capture rich data for both questions (Stake, 1995).

**Phase II**

In Phase II, we observed seven on-site school-family events and held six more teacher focus groups, which enabled us to capture the views of all teachers twice while minimizing the burden of our research on Sunnyhill. Eighty-five percent of the teachers identified as White and only one teacher was bilingual (see Table 2). To garner insights from the eight key school
personnel serving in formal roles around families and technology—whom we refer to as “school leaders”—we conducted 13 one-on-one interviews. Leaders Melissa, Toby, April, and James identified as White and spoke only English while Sarah, Lily, Alex, and Isabella identified as Latinx and bilingual (see Table 2). All names are pseudonyms.

Table 2

Study participants.

<table>
<thead>
<tr>
<th>Latinx Home Visit Mothers (Semi-structured interviews &amp; observations)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Susana</td>
</tr>
<tr>
<td>Two daughters; 2-parent household; English (first language) and Spanish; beautician’s license; some beautician and receptionist work; raised in an urban U.S. community.</td>
</tr>
<tr>
<td>Sofia</td>
</tr>
<tr>
<td>Two daughters and two sons; 2-parent household; Spanish (first language) and English; three years of college in Mexico; part-time administrative job for her family’s business; raised in a suburban Mexican community; immigrated at 20 yrs.</td>
</tr>
<tr>
<td>Mariana</td>
</tr>
<tr>
<td>One daughter and one son; 2-parent household; multilingual- Zapotec (first language), Spanish, and English; GED diploma; works from home as a supervisor of a service company; raised in a rural Mexican community; immigrated at 18 yrs.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Latinx Home Visit Children (Semi-structured interviews with siblings &amp; observations)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Susana’s children: 7-year-old girl; 8-year-old girl</td>
</tr>
<tr>
<td>Sofia’s children: 8-year-old girl &amp; 8-year-old boy (twins)</td>
</tr>
<tr>
<td>Mariana’s children: 7-year-old girl; 10-year-old boy</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Latinx Focus Group Parents</th>
</tr>
</thead>
<tbody>
<tr>
<td>56 Latinx parents</td>
</tr>
<tr>
<td>• 100% Latinx (School-wide: 95% Latinx; 4% Black; 1% White)</td>
</tr>
<tr>
<td>• 52% Spanish at home; 27% English; 18% Bilingual (School-wide: 38% Spanish; 44% English; 18% Bilingual)</td>
</tr>
<tr>
<td>• 93% Female; 7% Male</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>All School Leaders (Semi-structured interviews)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melissa</td>
</tr>
<tr>
<td>White; English-only</td>
</tr>
<tr>
<td>Toby</td>
</tr>
<tr>
<td>White; English-only</td>
</tr>
<tr>
<td>Sarah</td>
</tr>
<tr>
<td>Latinx; English &amp; Spanish</td>
</tr>
<tr>
<td>Lily</td>
</tr>
<tr>
<td>Latinx; English &amp; Spanish</td>
</tr>
<tr>
<td>April</td>
</tr>
<tr>
<td>White; English-only</td>
</tr>
<tr>
<td>Alex</td>
</tr>
<tr>
<td>Latinx; English, Spanish, Kriol</td>
</tr>
<tr>
<td>Isabella</td>
</tr>
<tr>
<td>Latinx; English &amp; Spanish</td>
</tr>
<tr>
<td>James</td>
</tr>
<tr>
<td>White; English-only</td>
</tr>
<tr>
<td><strong>Positions:</strong> Principal; Assistant Principal; Family Coordinator; Curriculum Leader; Research Head; Social Worker; Technology and Media Specialist; Information Technology Liaison</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>All Teachers (Focus Groups)</th>
</tr>
</thead>
<tbody>
<tr>
<td>13 teachers (100% of</td>
</tr>
<tr>
<td>• 85% (11/13) White; 15% (2/13) Latinx</td>
</tr>
<tr>
<td>• 100% (13/13) female</td>
</tr>
</tbody>
</table>
We also moderated four additional English and Spanish focus group interviews with 56 Latinx parents total, representing a third of all Sunnyhill Latinx families. Of the 56 parents, 52% spoke Spanish at home, 27% English, and 18% identified as bilingual. Furthermore, we conducted eight in-depth research visits in the homes of three Latinx families, capturing the perspectives of six children and three mothers (Susana, Sofia, and Mariana) through both semi-structured interviews and observation. Thus, our strategic approach allowed us to balance breadth (focus groups) with depth (repeated semi-structured interviews and observations)—although it also meant that we collected more data from Susana, Sofia, and Mariana than any other individual focus group parent.

As Table 2 shows, Susana, Sofia, and Mariana all lived in two-parent households and were fluent in English and Spanish. Susana, a native English speaker, had two daughters, grew up in a U.S. city, and learned Spanish as an adult. Sofia had four children, grew up speaking Spanish in a Mexican suburb, and moved to the U.S. at 20—learning English when her oldest was three. Mariana had a son and a daughter; she grew up speaking Zapotec in her rural Mexican community, later learning Spanish. After moving to the U.S. at 18, she mastered English too. Susana had a beautician’s license, Sofia attended some college, and Mariana had her General Education Development (GED).

Taken together, our diverse data sources aligned well to a case study approach, provided rich data for our interrelated RQs, and facilitated triangulation (Creswell, 2007; Stake, 1995). For instance, the documents provided insights into technology and language (e.g., translations;
virtual versus physical) but also informed our understanding of the school spaces (e.g., classroom Twitter feeds). Furthermore, the diversity in our data enabled us to check for alignment and dissonance in our findings across stakeholder groups (e.g., parents, teachers, leaders) and data sources (e.g., interviews, documents, observation).

To identify relationships between our initial codes and pool related data into conceptual categories, in Phase II we coupled ongoing open coding with axial coding (Saldaña, 2016). Open and axial coding, which have roots in grounded theory, are also useful in studies that draw from diverse data forms—such as interviews, observations, and documents (Saldaña, 2016). After axial coding, we examined how our clusters connected to EPE-related terms (e.g., space, roles, and capital; see Figure 1). As we did not want to restrict our analysis, this was not a rigid, deductive process—not every code needed to tightly align to EPE. To deepen our understandings of RQ2, we also drew organizational insights from EPE to frame each space as if it was also its own unit of analysis (see Figure 2; Creswell, 2007)—exploring themes both within and across the spaces. Tables 3 and 4 provide detailed examples of our multi-step coding.
Findings

Addressing RQ1, we found that technology and language both independently and concurrently shaped engagement. Digital literacy and bilingualism sometimes (but not always) emerged as important forms of capital. In some instances, technology facilitated school-to-home information sharing (particularly when parents were unable to be physically present), but was rarely used bi-directionally. Addressing RQ2, we found that engagement unfolded differently in each space depending on parents’ resources and the rules and norms of the particular space (see Figure 2). In each space, parents overcame barriers to interact and invest—virtually or physically—in their children’s schooling. Reflecting the relationship between RQ1 and RQ2, we
discuss our findings first within and then across spaces.

**Within Spaces**

Overall, parents felt “welcome” and “comfortable” at Sunnyhill. However, the four school engagement spaces that surfaced—the classroom, cafeteria, school events (auditorium and media center), and parent center (see Figure 2)—suggest a more nuanced within-building picture.

**The classroom.** At least in rhetoric, school leaders wanted parents to be “engaged,” with an emphasis on connecting parents to their children and one another with “fluidness between what is happening at school and...home.” As shown in Table 4, compared to school leaders, teachers tended to embrace conventional “involvement”—focused on what “good” families should be doing, such as “help[ing] their children with homework” and “attend[ing] conferences...or whatever meetings we have.” School policy mandated these conventional activities; for instance, the Family Handbook lists attendance at “all three required parent-teacher conferences” as one of the “expectations of parents.” Likewise, Mariana and Sofia noted that Sunnyhill expected them to “become involved in our children’s education” (see Table 2). Parents tended to discuss what they were “allowed” to do; exemplifying this theme, Sofia noted, “in the past, I had the opportunity to accompany them [the children] to field trips, when they [teachers] allowed me to...” Similarly, Mariana framed her *involvement* as being at the school and doing exactly what the teachers “ask you.” Reflecting a disconnect between rhetoric and practice, in contrast, school leader April argued, “it’s not us just asking them to come and do something at school, a job, a task” (see Table 4).

Table 4

*Stakeholder views of parents’ role in children’s learning (with codes).*
| School Leaders | "I could go with the typical, "Well, help with the homework, dah dah dah," but that's not what I, when I envision parent engagement, I see a fluidness between what is happening at school and what is happening at home. I envision parents feeling as comfortable in the school as they would feel in the home..." –Alex, Leader |
| Open Codes: Homework; Home Routines; Engagement Definition; Involvement Definition; School Setting; School Climate; Leaders Perceive Parents’ Role; Parent-Leaders Relations; Parent-Parent Relations |
| Axial Coding: Parenting; Within.fam.engage; Location.engage; Between.fam.engage; Relationships; Culture.engage; Leaders.views |
| EPE Connections: Parents in Interaction with Others; Authoring |
| Teachers | "I believe it really goes deeper than involvement because it's not us just asking them to come and do something at school, a job, a task. It's how we want them to actually build relationships with us and with each other, and with school kind of in the mix of that, but also between families...." –April, Leader |
| Open Codes: Homework, Home Routines, School Events, PTA, Involvement Definition; Participation; Teachers View of Parents’ Role; Teacher-Parent Relations |
| Axial Codes: Parenting; Location.engage; Relationships; Teachers.view.parents.role; Involvement; Culture.engage |
| EPE Connections: Rules and norms of engagement; Roles of teachers and parents; School events as space; Parents in interaction with others |
| Latinx Parents | "Just as a parent myself, and as a teacher for many years, parents that help their children with homework, ask questions, attend conferences…or whatever meetings we have, STEM family nights, this and that, I just consider them to be involved in their child's life, and in their child's school life." –Teacher |
| "If they're participating, I see it as we create something and then they come along side and just do it." –Teacher |
| “I feel like that’s parent involvement, showing up to these meetings.” –Teacher |
| Open Codes: Homework, Home Routines, School Events, PTA, Involvement Definition; Participation; Teachers View of Parents’ Role; Teacher-Parent Relations |
| Axial Codes: Parenting; Location.engage; Relationships; Teachers.view.parents.role; Involvement; Culture.engage |
| EPE Connections: Rules and norms of engagement; Roles of teachers and parents; School events as space; Parents in interaction with others |
| Teachers | "They take parents into consideration and they involve them in many different things. For example, they also have a carnival and we come to help them. We also work in the cafeteria…it’s good to be here. To be here, involved in our children’s school." –Parent |
| "Getting involved, it's whenever the teachers needs help, for a field trip they will ask you, and serving in the cafeteria, we're always there.” —Mariana, parent |
| “Because it is important to be involved in the education of my child [through school events] and to be able to see the school atmosphere.” –Parent |
There were limited opportunities for parents to be physically present in the classroom. While one parent felt that the teachers “have an open door,” overwhelmingly, parents in focus groups remarked that they “don’t visit [the classroom] frequently” and when they do, it is typically “for school meetings about my children’s work.” Unlike nearby public schools, there were no “class parents.” One teacher explained, “homeroom moms…we don’t do that…moms coming in and doing bulletin boards…we don’t really have that here.” Until the 2016-2017 school year, parents did not visit the classroom before school started, because Sunnyhill visited homes instead. Discussing the new “back-to-school meetings” another teacher stated, “Let them [the parents] come see the classroom where their child is going to be this year.” Coupled with the lack of more typical opportunities for parents to enter the classroom, parent language suggests that teachers were gatekeepers to classroom access. Phrases such as, “they [the teachers] let the parents come” and “they [teachers] always allowed me [to…]” were quite common.
Data revealed that parents’ opportunities to participate in classrooms declined as their child aged. For instance, pre-K parents were asked by teachers to “take home stuff to cut,” and first-grade parents came for a “math games” classroom event. According to Melissa, a school leader, “younger kids and families come together and they just share in their students’ work with one another.” As an early grades teacher explained, “it’s not like they’re in the classroom every day”—just for special events.

In contrast, however, parents of children in the higher grades had fewer opportunities. Nearly all second- through fifth-grade teachers agreed that parents were rarely if ever present in the classroom. For instance, one higher-grade teacher noted that even though her parents were “really involved at home” and participated in non-academic spaces in the school, she “wouldn’t consider any of [her] parents involved [in the classroom] because they don’t have the opportunity to be.” A bilingual mother discussed this shift connecting it to the macro-context of achievement testing, “When the kids get a little bit older…they [teachers] didn’t really say about us coming in. I think it’s because they want to…get down more to the learning process and the testing.” One higher-grade teacher noted, “as far as involved in the classroom, I don’t really think we have things in place here at the school that allow that.” Another teacher qualified how this shift was a norm and not a firm policy: “[it’s] not necessarily like it’s against the rules, but it’s not really built into our culture.”

For some parents, it did seem against the rules; one parent remarked: “knowing what the kids are doing is important to be able to help them” but “during the day we do not have opportunities to see the teachers.” Likewise, Mariana, who was often present at the school, noted that she does “not [participate] inside the classroom.” However, she confessed, “sometimes I look through the small [classroom] door window and I do not get in trouble because I can
observe what the kids inside are doing.” As this quote illustrates, Mariana resorted to peering through the window—an engagement act she felt was school-sanctioned. The phrase “I do not get in trouble” suggests power imbalances between staff and parents and evokes imagery of Mariana as a student rather than an adult, with her behavior regulated by teachers. It also demonstrates her desire to better understand what transpires inside the classroom.

Language, technology & the classroom. Bilingual leaders noted that Spanish was not used in classrooms; Alex stated, “the reality of it is, we teach our children in English,” and Sarah remarked: “if you [the parents] really want them to have that Spanish language…you’re really going to have to work hard on that at home.” In pre-K, parents reported helping in classrooms by “read[ing] to the kids, especially in Spanish.” In the older grades, however, majority-White foundation donors replaced the parents and served as English-language “reading buddies” instead. We found little to no evidence of Spanish being used (even occasionally) in the upper-grade classrooms. As one upper-grades child explained, “it’s English [in the classroom]. That’s all my teacher and everyone else speaks.” Demonstrating an orientation to action, a couple parents felt that “it is more complicated” for Spanish-only families to visit the classroom because “they may think that they will not have anyone to translate.” Yet, barriers to classroom access traversed language lines, also impacting parents who were comfortable in English.

The classroom was a technology-heavy space, with daily use of tablets and laptops. Yet, James, a school leader, noted how “some of the teachers are a bit wary of technology.” Four out of 13 teachers reported being “somewhat comfortable,” five “fairly,” and four “very” comfortable with technology. Nearly all teachers used technology in the classroom for independent reading or mathematics practice. Some used it for research; one student outlined how her class “gets on a website and search[es] scientists.” Others created Google slides and
videos shared via quick response (QR) codes, Facebook, and Twitter. For these classrooms, some parents mobilized their own digital literacy skills to connect to the classroom. For instance, one parent, exclaimed:

I have Twitter…and if you’re on there, you constantly get to see what the classroom is doing…Like, ‘oh, look what they did today!’ Or you will bring it up later, like, ‘what did you do today?’ and they are like, ‘nothing’ and you are like, ‘you had a spelling test today, I have seen it!’ And they think I am literally in the window, looking—but they don’t know that I was looking on Twitter.

As this quote highlights, the parent used Twitter as a tool to gather information about her children’s classrooms and then applied this knowledge to her parenting—which was particularly important since she was not able to be physically present in the classroom. Susana also used digital tools to connect with classrooms remotely:

I know at school they’ll have maybe pictures of a play or like something they are doing…and the QR code will be there and…if I have my cellphone I can scan it and I can watch it while they’re at school or if I’m sitting in the [school] hallway waiting.

Thus, parents used technology to remotely and virtually participate in a space that was largely off limits to physical engagement. As exemplified here, technology tended to provide only a one-way avenue (classroom to parent) for communication. One teacher worried it could be intrusive “because of the communication being open” if technology was used bi-directionally.

Despite some parents’ advanced skills with digital tools like Facebook and Twitter, teachers tended to treat parents homogeneously—positioning them as digitally limited. One teacher noted that parents “need to be explicitly taught how to monitor their child’s use” of the Internet, while another explained she would have to “literally walk through, step-by-step [with
parents], how to manage [technology] with their children.” Echoing several teachers’ thoughts, another teacher suggested that communication about technology should “be very simple for the parents…because they might misinterpret the directions.”

The cafeteria. Unlike the classroom, in the cafeteria, parents were “always there.” One teacher highlighted this contrast: “they come up to school and they participate in the cafeteria; the parents don’t directly come into the classroom and participate.” Working in the cafeteria was mandated; according to the Family Handbook, parents are expected to “serve their required 12 days of cafeteria duty.” Additionally, parents could be “lunch moms” (fathers were permitted but did not participate) to reduce tuition by 50% or serve weekly as kitchen lead to drop tuition to $25 a month. Susana, who worked part-time, cited challenges for employed parents, “it is difficult…the lunch duties, it’s 12 of them. If you don’t do one, they give you two more.” As Toby, a school leader, recognized, “some moms do it because they want to be here for their kids...some...because they really need the tuition break.”

In the cafeteria, parents interacted not only with one another, but also students, teachers, and leaders. According to school leaders, parents helped by “opening ketchups” and monitoring students. Teachers sometimes came to the cafeteria to “talk to [parents] about the behavior of the student” and an administrator was always on hand to provide support.

Language, technology & the cafeteria. Unlike the classroom, in the cafeteria, Spanish-only parents could participate and bilingualism was particularly valued. Susana described the cafeteria as a place where language differences were often negotiated without translators, “everybody tries their best,” and “they force themselves to” use whatever English or Spanish they know. Most parents liked working in the cafeteria. As a Spanish-speaking mother stated, “The cafeteria activities give you a space. It is an open space. People come and go. You can see
who comes and who goes.” Sofia noted, “I believe it’s a splendid way to see them during lunch hour. They say ‘hi mommy…you came to see me at lunch.’ I believe it gives us the opportunity to participate.”

Other than the school sending a text when parents missed lunch duty, the cafeteria was not a technology-heavy space, but it demonstrated the spectrum of Sunnyhill’s parental opportunities. While parents were able to interact with one another, school stakeholders, and their children, the cafeteria was also a non-academic, bilingual space where parents, the majority of whom were Latinx women, were positioned largely as a source of labor. A teacher noted, “we don’t have cafeteria workers. There’s parents.” Likewise, another exclaimed, “parents have responsibilities in coming and participating, whether it’s the cafeteria or coming to a conference.”

School events. According to the Family Handbook, parents were expected to “participate in school events.” Often held in the auditorium or media center, Sunnyhill’s events aimed to encourage “within [parents with their own children]” and “between [across households] family engagement.” Although some parents reported attending “to be involved in the education…and to be able to see the school atmosphere,” most events, such as grade-level picnics, were, according to leader Toby, “not necessarily even academically connected.” Sarah, another leader, proudly discussed a movie night where parents “chose the food, they came up with the invitations, they’re keeping the RSVPs” and the school just helped “to make it logistically work.” Yet, while leaders hoped parents would regularly orchestrate such events for the school, they expressed dissatisfaction with parents’ progress and ability to comply. Lily, for instance, noted that it had been difficult “trying to figure out how to get parents more motivated to do the more parent-initiated kinds of events.” Suggesting her disappointment in parents, a teacher,
concurred, “we did ask parents to coordinate some of our family events, and it fell through…I am hoping we kind of get the ball rolling with that.” While managing school events was not a Family Handbook expectation, these quotes demonstrate that rather than looking inward at themselves, staff blamed parents for the lack of parent-driven non-academic events. The same teacher was satisfied, however, that parents did attend meetings on the transition to middle school, where, she argued, “I feel like that’s parent involvement, showing up to these meetings.”

The school calendar included monthly non-mandatory meetings with the principal, which according to parent interviews and observations, were largely “informative.” According to Sofia, the principal “told them what was going on with the school” and asked parents “if they had any doubts or if we want to say something.” Reflecting the lack of parent voice in school decision-making, Sofia explained, “they let us know like, ‘these were the changes.’”

In fact, there were limited opportunities for families to engage in decision-making or governance. While the surrounding public school district supported parent-teacher associations (PTAs), Sunnyhill did not. Susana argued that the lack of a PTA was intentional:

The groups of parents that come together are the ones that try to run stuff…maybe they want to avoid that…having that group of parents that are going to make it hard for them [the school] to do stuff because…it’s kind of hard to say no to a big group.

While Susana felt that the lack of a PTA limited parental voice, a couple other parents, such as Mariana argued, “because people get into disagreements…I like it the way we have it.”

**Language, technology & school events.** School events were typically bilingual spaces where language was used to mediate a welcoming environment. Mariana noted that at school meetings, “they always ask if you prefer English or Spanish.” As she explained, even when parents spoke English as a first language, they tried to “speak Spanish a little bit, and they will
make people comfortable.” Bilingual parents served as language liaisons; Sofia, for instance, activated her bilingual resources to orchestrate preparations for Cinco de Mayo—mediating between parents and staff. As she explained, a teacher “or another person that doesn’t speak Spanish” would ask her to relay messages and she would respond, “let me go ask them and I can come back and give you an answer.”

An exception to the mostly social or informative calendar of events, Sunnyhill had started organizing one science, technology, engineering, or math (STEM) family night each semester. These educator-led, hands-on academic events sometimes enabled parents to share their own technology skills with their children or even develop their skills alongside their family. Leader Alex explained, “we have families talking to each other but they’re sitting at tables with other families so you can build that sense of community.” Discussed by five of eight leaders, these events were well attended; one we observed drew more than 65 families (37% of all households).

Beyond these nights, there were limited formal opportunities for parents to demonstrate or deepen technology skills. For instance, students used the media center for a range of academic activities (online reading and researching). Likewise, teachers came in for the media specialist’s “office hours,” which leader Alex explained, allowed the school to understand “where teachers’ concerns are” and served “as a space for us to think about what’s our next [professional development] that we need to give the teachers in their movement towards becoming more fluid with technology.” Despite parents requesting similar support, outside one daytime cyber-bullying session attended by six parents, parallel opportunities for parents did not exist. In a subsample of 58 focus group parents, 100% expressed interest in training around different technology applications and over 86% wanted workshops on online safety. Likewise, reflecting her orientation to action, Susana asked leaders for more information on how she can support her
daughters with technology. Yet, she felt unheard and noted that school messages around technology often focused “more like [on] the rules” and “what was expected of the kids, was expected of us.”

**The parent center.** Established in 2016, the parent center was “a space where parents can be; where they can gather together.” The size of a large classroom, it was colorful with toys, coffee, tables, couches, computers, and a printer (see Figure 2). Discussed by seven of eight leaders, the center was a source of pride. Leader April explained:

> The most interactive that is the least connected to a responsibility or a duty is our parent center…it is truly a space for them…They determine what they want to happen in there…but it’s driven by them, not us.

In the center some parents led art, cooking, and aerobics classes, and everyone worked on school-wide holiday preparations.

Latinx parents discussed how the center facilitated engagement. One mother described the center as “an excellent space to share, learn, and create a school community that is strong and positive.” Notably, parents could be “present”—some mothers attended “everyday,” “each week,” or “many times.” This presence connected them to their children, other parents, and indirectly, educators. Susana felt it made her children feel safe:

> …in the back of their mind, they are like “my mom is here. I can go to her real quick if I need something.” If they need anything, they know, even the teachers themselves, they know I’m there [in the parent center].

Thus, Susana leveraged her presence in the parent center to engage in her children’s schooling.

Parents also noted that the center allowed them to learn about community resources and “get informed.” Sofia stated, “I mean it’s something that keeps us in touch—especially for our
kids’ education.” Another parent noted how she continues to research more about resources she hears about at the center at home.

Other parents reflected on how the center built their support network and reduced stress. For instance, Mariana stated, “just knowing that I can talk to those parents, that I can trust them, they can trust me. It’s just helped me release a lot of stress…I just feel good to be there.” Similarly, another parent declared that “being here [parent center] for a while helps you forget about all the other things you have to do.”

While in many ways the center emerged as a beneficial engagement space, it was generally limited to non-academic activities. As a teacher noted, “there’s a lot of moms that will do stuff in the parent center, but that doesn’t really involve the teachers.” Parents might learn about a new after-school program, but the majority of the time they did crafts, couponed, “share[d] recipes” or practiced Zumba—which built bonds—but had limited direct connections to teaching and learning. Every event listed on the center’s Facebook page—a fall festival, holiday party, Día del Niño celebration, and Cinco de Mayo parade (which they “prepared for months”)—were social, not academic.

Although some activities were parent-led, school leaders maintained authority, serving as gatekeepers—even if unintentionally. For instance, leader Isabella revealed:

My [purpose] here…is to make it a place where you can come, you can visit, you make friends, you get involved with the school…I don’t want the parent center to be a place where I…give advice and “you have to do this, or you have to do that.” When I come …they’re usually sitting there waiting. I am not sure what they are waiting on. I think it’s waiting on direction…I want them to take ownership of the parent center.
Yet, as Susana explained, parents needed someone to “not take charge, but at least be our supporter—and obviously we needed somebody from the school because we need to know what we can and can’t do.” Susana’s quote demonstrates an interesting contrast—that parents wanted a supporter not a leader, but the “supporter” would essentially regulate their behavior. Parents were comfortable in the parent center but felt they could only take initiative if school sanctioned.

**Language, technology & the parent center.** Isabella explained how limited English and demands on Latinx mothers to care for others hindered employment opportunities—thus providing many Latinx mothers with flexibility to attend the center. Full-time working parents had fewer opportunities to be present because most of the programming took place during the day.

The parent center valued Spanish; in fact, most activities and conversations were in Spanish—effectively isolating English-only parents. Bilingual parents played a particularly important role; their presence in the parent center made them available to serve as translators for Spanish-only parents and English-only school staff. Susana explained:

I’ve gotten a lot of “can you help me translate with the teacher” because they need to ask something because of the homework or just maybe a comment the kids had said to them about class…and I’ll help them and they know. They’re like, “I know sometimes you’re in here [parent center].”

Through her presence in the parent center, Susana was able to activate her bilingual resources, connecting Spanish-only parents to teachers.

The parent center also emerged as a space where digital literacy was valued and fostered. One mother used the center’s computers for her own course assignments while Mariana recognized that “most of the parents are sending emails” on the computers or “are printing out
some paper because they don’t have a printer at home.” To ensure her children were making adequate progress on digital homework assignments, Susana had “conversations with the parents about the kids, how far they are on their [math applications].”

Parents also shared their technology knowledge with others. A couple of technologically savvy mothers established and maintained the center’s Facebook page that allowed parents to author posts and stay virtually connected. Likewise, leader Alex noticed that parents taught one another “how to look at the [web] history” and helped with troubleshooting. Isabella also explained how digital literacy was cultivated informally in the center:

Some of the parents who are coming that didn’t feel comfortable with technology expressed it…and one of the parents said, “I’ll show them.” They’re able to check out [laptops] from the library. She’s been teaching them…

Thus, parents confident with technology could embrace informal leadership roles.

While many Latinx parents—irrespective of English or technology skills—found value in the parent center, the parents who were able to take ownership of the space (by acting as translators, hosting informal technology or troubleshooting sessions, or managing the Facebook page) were the very parents with resources valued by the parent center. That is, they were both bilingual and digitally literate.

Across Spaces

In this section, we focus on the role of technology and language in shaping Latinx parent engagement across spaces. We first explore technology and digital literacy and then language and bilingualism. Afterward, we explore how both technology and language concurrently shaped engagement.
Technology & digital literacy. Parents varied in confidence with technology—which had implications at the technology-focused school. Reflecting this variation, a parent reported, “to this day, I am not too tech savvy” and another mentioned, “I’m not good at technology.” In contrast, another mother profiled how her digital literacy allowed her to be virtually and remotely “present” in her children’s education (see Table 3). Likewise, Mariana explained that even when exhausted at the end of the day, she “still made time to look at [Sunnyhill’s] Twitter, what’s going on.” She also used the public library and educational websites in order “to get anything I can learn to help my kids.”

Table 3

Samples of quotes with multi-step coding.

<table>
<thead>
<tr>
<th>Quote</th>
<th>Open Codes</th>
<th>Axial Codes</th>
<th>EPE-Related Terms</th>
</tr>
</thead>
<tbody>
<tr>
<td>“I have Twitter…and if you’re on there, you constantly get to see what the classroom is doing…Like, ‘oh, look what they did today!’ Or you will bring it up later, like, ‘what did you do today?’ and they are like, ‘nothing’ and you are like, ‘you had a spelling test today, I have seen it!’ And they think I am literally in the window, looking—but they don’t know that I was looking on Twitter.” –Parent</td>
<td>Twitter Access</td>
<td>Digital.Lit</td>
<td>• Technology as Tool</td>
</tr>
<tr>
<td></td>
<td>Wifi Access</td>
<td></td>
<td>• Presence</td>
</tr>
<tr>
<td></td>
<td>Parents’ Technology Skills</td>
<td></td>
<td>• Capital</td>
</tr>
<tr>
<td></td>
<td>Parents’ Technology Use</td>
<td></td>
<td>• Classroom as Space:</td>
</tr>
<tr>
<td></td>
<td>Teachers’ Technology Skills</td>
<td></td>
<td>o Parent uses virtual tools to connect to classroom remotely</td>
</tr>
<tr>
<td></td>
<td>Teachers’ Technology Use</td>
<td></td>
<td>Communication. method</td>
</tr>
<tr>
<td></td>
<td>Twitter for Information Sharing (Teacher to Parent)</td>
<td>Communication. purpose</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Academic Information</td>
<td>Communication. direction</td>
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</tr>
</tbody>
</table>
| Remote/Virtual Engagement | Type.engage | Parent Center as Space:  
<table>
<thead>
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<th></th>
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</thead>
<tbody>
<tr>
<td>Overseeing Classroom</td>
<td>Location.engage (classroom)</td>
<td></td>
</tr>
<tr>
<td>Parent-Child Relations</td>
<td>Within. fam.engage Parenting</td>
<td></td>
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<tr>
<td>Home Routines</td>
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<td></td>
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<tr>
<td>Translating</td>
<td>Bilingualism</td>
<td></td>
</tr>
<tr>
<td>Navigating School</td>
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<td></td>
</tr>
<tr>
<td>Parent-Parent Relations</td>
<td>Between .fam.engage Relationships</td>
<td></td>
</tr>
<tr>
<td>Parent.child.relations</td>
<td>Within.fam.engage</td>
<td></td>
</tr>
<tr>
<td>Teacher-Parent Relations</td>
<td>Relationship</td>
<td></td>
</tr>
<tr>
<td>Physical Engagement</td>
<td>Type.engage</td>
<td></td>
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<tr>
<td>Homework</td>
<td>Home. routines Parenting</td>
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</tr>
<tr>
<td>Parent Center</td>
<td>Location.engage (parent center)</td>
<td></td>
</tr>
<tr>
<td>Parent Center</td>
<td>Tech.location</td>
<td></td>
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<tr>
<td>Library</td>
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<td>Technology at School</td>
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<td>Leading/Sharin g Technology Skills</td>
<td>Tech. roles Digital. lit</td>
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<td>Parents Technology Abilities</td>
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<td>Technology Access</td>
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<tr>
<td>Parent-Parent Relations</td>
<td>Relationship Between. fam.engage</td>
<td></td>
</tr>
<tr>
<td>Reason for Engagement</td>
<td>Engage.purpose. tech</td>
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</table>

“I’ve gotten a lot of ‘can you help me translate with the teacher’ because they need to ask something because of the homework or just maybe a comment the kids had said to them about class…and I’ll help them and they know. They’re like, ‘I know sometimes you’re in here [parent center].’”

–Susana, parent

“some of the parents who are coming that didn’t feel comfortable with technology expressed it…and one of the parents said, ‘I’ll show them.’ They’re able to check out [laptops] from the library. She’s been teaching them… –Isabella, school leader

• Presence  
• Capital  
• Roles  

• Parent Center as Space:  
  o Bilingual parent’s presence in parent center allows her to help Spanish-only parents communicate with teachers  
• Parents in interaction with others  
• Capital  
• Technology as tool  
• Authoring  
• Positioning  

• Parent Center as space:  
  o Parent shared digital literacy skills with other parents in parent center
Some parents were able to mobilize digital literacy skills to engage. In some cases, they shared their skills with other parents—such as through the parent center’s Facebook. Susana explained how she used her digital literacy skills to connect to classrooms, help her daughter with academics, and support other parents:

I got on YouTube one time because she was learning this math steps and the kids learn a certain way with the teachers…I remember telling parents, if you get on YouTube you can look it up…you can just transfer it over [into] Spanish.

In this sense, technology sometimes served as a tool that could traverse language barriers to allow parents to connect to their children’s learning. More often, parents mobilized their digital literacy to receive one-way information from the school—such as when they used Twitter or QR codes to understand the classroom.

**Language & bilingualism.** Bilingualism also emerged as an important engagement resource. The complex role of language at Sunnyhill was evident in this quote from leader April:

I believe they [parents] feel more comfortable here [than other schools] because their language doesn’t present a barrier. I wish everyone was bilingual. That was my goal in
the decade of my fifties. I was going to learn Spanish. I tried everything and I was not successful so it just won’t stick.

April believed language did not create barriers to parents because she felt the school valued Spanish. She also promoted the importance of bilingualism but revealed that she remained monolingual. Reflecting her power and privilege in Sunnyhill’s social hierarchy, April accepted her own linguistic challenges without recognizing Latinx families’ barriers. However, as a school leader, she was effectively helping to set and maintain Sunnyhill’s language norms. While April argued that parents’ “language doesn’t present a barrier,” our data revealed nuanced ways in which language resources and norms mattered greatly.

Bilingual parents (18% of sample and school-wide) could communicate directly with school staff and Spanish-only (52% sample; 38% school-wide) parents. As a Spanish-only mother noted, “I don’t know much English, so it’s difficult for me to help them [her children with school].” Another mother explained that to talk with her son’s teacher, she sometimes has “to wait to the next day or another occasion in which there is someone [who speaks Spanish] close [to translate].” An English-only teacher noted how parents “a lot of times” asked the one bilingual teacher to communicate with her for them. In comparison, Mariana noted how her language skills aided her in speaking with teachers:

…if the kids are… in trouble, you can always go straight to the teacher, and talk. You don't have to wait for somebody to be there to translate for you…probably they won't say…everything that you really want to let the teacher know.

Alternatively, bilingual parents served as language liaisons, positioning themselves to help Spanish-only parents navigate the English-dominant school. Another bilingual parent noted how she “enjoy[s] helping them [other parents].” Bilingual parents reported that their language skills
gave them confidence and helped them navigate spaces to assist their children—turning their language resources into capital. Bilingual parents could fully participate in the parent center, where Spanish was valued, interact with everyone in more bilingual spaces such as the cafeteria and school events, and communicate directly with English-only teachers about academics.

**Intersections of technology & language.** Technology and language also intersected to shape engagement. Parents who created their own opportunities for leadership within the spaces (such as by acting as translators in the cafeteria or hosting informal laptop sessions in the parent center) were the very parents who had the currency to traverse across the spaces. That is, they were bilingual and digitally literate. In the technology-heavy school, English-speaking parents still needed digital fluency to take advantage of Twitter feeds, QR codes, and Facebook updates.

Even when parents were confident with technology, language remained important. For instance, the school used creative ways to connect to families—in person (e.g., home visits, events), remotely (e.g., surveys, feedback forms), and virtually through technology (e.g., Twitter, Facebook). However, our analysis of documents revealed that although the school translated the monthly digital newsletters, the official Facebook page, school-wide reminder texts, and nine out of 10 of the teachers’ Twitter accounts were only in English. Furthermore, Sunnyhill had 26 blog entries (some on technology), yet none were in Spanish (inaccessible to 38% of parents). Leader Lily noted how “we have an entire website where we have like a blog post that kind of gives…parenting tips [on child development and aligned activities to do at home] but it’s all in English.” She noted it was the parents that “pointed that out.” Thus, the emphasis on technology intersected with Sunnyhill’s language norms. Even technology-savvy parents were not contributing to the school blogs, tweeting back to teachers, or writing on the school’s Facebook page—although some contributed to the parent center’s Facebook. While technology created
new communication avenues, it was often only one sided (school to family but not family to school) and restricted to parents with a certain combination of technology and language resources.

**Discussion**

Our findings illustrate that at a school where the vast majority of families were low-income Latinx, there was variation by space in how parents were able to mobilize their resources, situate themselves, and engage. Contributing to work on technology for Latinx parent engagement (Durán et al., 2001; Nogueron-Liu, 2017), our study found that some parents managed to use available technology and language resources to help shape schooling in unique ways. However, by regulating parents’ behavior and maintaining power differentials, school staff often truncated opportunities for parent engagement. Here, we revisit EPE, connect our findings to the literature, and discuss implications.

**Revisiting EPE**

Our findings both align with and extend Calabrese Barton and colleagues’ (2004) EPE framework. First, *presence*, a form of parental engagement in EPE, was also evident in our study. However, we recognize that *presence* was not a realistic or desirable option for all parents. We note blurriness between presence as desirable for some parents, and presence as a burden. Its potentially adverse impacts may be exacerbated when mandated by school policy (the macro-context)—as in the cafeteria. Interestingly, however, we found that Latinx parents used both their physical and virtual presence to engage—peering through classroom windows *and* lurking on Twitter and Facebook. Thus, depending on technology access and use, virtual tools may serve as an additional, perhaps less time-intensive pathway to *presence* for some parents. However, when
technology is used only for one-way communication, as was common, its potential as a route for presence, although not altogether eliminated, is hindered.

As Sunnyhill parents used available resources in each space to shape life in schools (e.g., acting as language liaisons to plan events and monitor children’s academic progress; leading informal technology sessions to share digital skills), we also see evidence of authoring and positioning (see Figure 1 and Tables 3-4). For instance, by sharing with other parents how YouTube can help them understand their children’s mathematics, Susana demonstrated how she activated her digital literacy to author a space for herself in her daughter’s academics and position herself as a knowledge broker for other parents. We also see evidence of parents’ orientation to action such as when they critiqued barriers Spanish-only parents faced in the classroom or highlighted challenges of cafeteria duty for working parents.

Our study highlights how Latinx families often deployed a mix of cultural resources that became capital when they were activated and benefits were gained. We shed light on the complex ways in which Latinx parents at Sunnyhill were marginalized but also displayed strengths that both challenged and exemplified conventional definitions of school involvement—definitions that typically demand conventional forms of resources in select, school-sanctioned ways (see Calabrese Barton et al., 2004). Our work simultaneously recognizes the obstacles inherent in redefining or revaluing “what counts” as capital (see Olneck, 2000, p. 317), while also countering assumptions that may position Latinx families in deficit ways.

Contributions to Scholarship & Implications for Practice

Our findings problematize conventional notions of what it means to be “involved,” highlight mechanisms that contribute to how and why parents engage, and illustrate how constraining school environments can continue to hinder non-dominant families in distinct ways
(Barajas-López & Ishimaru, 2016; Calabrese Barton et al., 2004). By focusing on space, language, and technology, we contribute to understanding the spectrum and potential imbalance of Latinx parent engagement opportunities.

Sunnyhill parents appreciated the numerous chances to interact with other parents and noted how socializing helped connect them to the community, navigate Sunnyhill, reduce stress, and serve as an “outlet…for themselves.” These psycho-social benefits should not be understated (see Prins, Toso, & Schafft, 2009). Parents also had ample opportunities, recognized by some as an “expectation,” to provide labor for the school. While some parents appreciated the social side effects, this “help labor” (Christianakis, 2011, p. 165) fuels gender and cultural stereotypes that narrowly position low-income Latinx women.

Our data provided only limited evidence of opportunities for engagement in children’s academics—despite parental interest. For instance, the classrooms were largely off limits to parents (even those comfortable in English)—although some families (depending on language and technology resources) visited virtually. Across the grades, Sunnyhill classrooms frequently welcomed touring visitors and “reading buddies” from the foundation—but in striking contrast, not parents. This can send a deficit message about parents’ role in academics that could follow families into post-elementary settings. Although parents in our study sometimes used many other tools at their disposal to better understand their children’s academic learning (e.g., peering through windows, accessing QR codes, using websites), they were wary of “get[ing] in trouble” or doing something they “can’t do.” While also demonstrating the importance of respectful relationships in Latinx families (Durand, 2011), this language sets the school as regulators of parents’ behavior, suggesting limitations to parents’ authoring and positioning.

In addition to the lack of formalized opportunities for parental leadership, there were
scarce opportunities for parents to formally share or expand their digital skills—despite variation in parents’ technological resources (Katz & Gonzalez, 2016; Nogueron-Liu, 2017). Parents’ calls for more technology trainings went largely unanswered, which is particularly problematic in instances where digital literacy was expected. Sunnyhill’s biannual STEM nights were still school-led and missed the opportunity for staff to recognize families’ skills (see Wassell et al., 2017). Perhaps not surprisingly, our findings also suggest that Sunnyhill often used technology as a one-way communication tool—to distribute school information to parents. Nevertheless, some Sunnyhill parents leveraged technology in innovative ways (e.g., reinforcing parenting using information gleaned from Twitter), thus illuminating opportunities for schools and researchers to broaden how they frame technology, explore beyond communication, and elicit ideas from families regarding ways to connect through digital tools.

Our study demonstrates that, across spaces, power differentials between parents and the school often served to truncate engagement. Fundamentally, parents needed a unique combination of resources, including digital literacy and bilingualism, in order to traverse across spaces. To maximize opportunities for engagement, English fluency was not sufficient—parents also needed Spanish (e.g., in the parent center) as well as digital literacy (e.g., QR codes). We recognize the importance of school spaces, like the parent center, where Spanish is valued; but even there, English proved advantageous. Furthermore, even when parents were bilingual and digitally literate, they continued to face some space-based participation barriers. In contrast, Sunnyhill leaders and teachers could retain considerable power as engagement gatekeepers—even if they only spoke English or were “a bit wary of technology.” In other words, by setting and maintaining language and technology norms—like the Twitter feed language or prevalence of QR codes—leaders and teachers retained considerable power.
For schools like Sunnyhill to advance Latinx parental engagement, they must dismantle power differentials. Leaders should prioritize the hiring of bilingual Latinx faculty and build critical awareness of educational inequities through targeted professional development. Schools must also interrogate the alignment between rhetoric, policies, and practices around language, technology, and engagement. Finally, they should calibrate their spectrum of engagement opportunities with parents’ strengths, needs, and desires. Schools and families could conduct collaborative “engagement audits” that specifically aim to uncover where (e.g., the space), how (e.g., physically, virtually, directionally), and why families are engaging or wish to engage in order to guide the identification and dismantling of barriers. Ideally, however, there should be spaces for parents to network and feel valued in academic settings—especially when parents are virtually and physically “in the window, looking” attempting to gain access. This could occur through physical classroom interactions, virtual means such as the translation of resources (e.g., child development blogs), or the use of technology tools (e.g., Twitter) for bidirectional communication. Urban, high-tech schools aiming to enhance Latinx parent engagement must ensure that they properly value and support parents’ language and digital resources—both in rhetoric and practice.
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Chapter IV: Effects of a blended professional development program on teachers’ quality of English learner instruction

With more than 4.9 million English learners (ELs) in US schools and the number on the rise, education stakeholders are increasingly concerned by persisting inequities for students whose first language is not English. On average, ELs score significantly lower than their peers across grade levels and subject areas, and ELs are less likely to attend school consistently or graduate from high school (NAEP Dashboards, 2019; NEA, 2015). While there are countless and complex factors contributing to these disparities, teachers and their quality of instruction are often viewed as crucial to closing achievement gaps. Subsequently, teacher educators have begun to explore ways to equip all teachers with tools and strategies for serving linguistically diverse students. Technology has emerged as a potentially useful instrument in this movement, and teacher educators are increasingly integrating technology into training or making technology topic of discussion. Similarly, technology has become more prevalent in education policy. For example, in their policy brief entitled “Advancing Educational Technology in Teacher Preparation,” the US Department of Education Office of Educational Technology calls for teacher educators to use technology in meaningful ways throughout educator preparation programs and professional development so that teachers have ample opportunity to observe and practice transformative technology integration (Stokes-Beverley & Simoy, 2016). One of its guiding principles is to “ensure pre-service teachers’ experiences with educational technology are program-deep and program-wide, rather than one-off courses separate from their methods courses” (p.9). To answer this call, some teacher educators have turned to various models of blended learning or mixed-reality simulations to provide relevant opportunities for teachers to learn, practice, and reflect on their teaching.
**Purpose**

The purpose of this quantitative case study is to examine the effect of a blended professional development program on teachers’ quality of EL instruction as measured in a simulated classroom and test for causal treatment effects of group assignment (university versus community site). Additionally, I will outline the process of developing an observation tool used to capture teachers’ quality of instruction. By comparing teachers’ EL instruction at the end of the program to baseline scores, I will explore whether teachers in general demonstrated improvement and illuminate what role blended learning and embedded opportunities to practice in the community may play in future professional development and teacher preparation programs. Furthermore, I will test the hypothesis that any benefit may be amplified for pre-service teachers in particular, given the embedded opportunities for practice, whether authentic or approximations.

**Literature Review**

To situate the present study, next, I will summarize literature related to the growing use of blended learning, approximations of practice, and mixed-reality simulation in teacher education.

**Blended Learning**

The field has not yet come to consensus on what exactly constitutes *blended learning*, and Oliver and Trigwell (2005) challenge the appropriateness of the phrase, arguing that the use of *learning* is misleading, because the term is generally used in reference to *teaching*. Despite its ambiguity and contention surrounding the phrase, blended learning has become a growing topic of interest in research and practice. In the present study, I operationalize *blended learning* according to the Christenson Institute’s definition:
…blended learning is a formal education program in which a student learns: 1) at least in part through online learning with some element of student control over time, place, path, and/or pace; and 2) at least in part in a supervised brick-and-mortar location away from home; and 3) the modalities along each student’s learning path within a course or subject are connected to provide an integrated learning experience.

Much of the research on blended models of professional development for teachers focuses on programs aiming to train teachers to integrate technology into their teaching (see Homes, Polhemus, & Jennings, 2005), but the contexts in which blended learning is being intentionally integrated and studied are becoming more varied and vast to include, for instance, entire institutes of higher education (Picciano, Dziuban, & Graham, 2013). Owston, Wideman, Murphy, and Lupshenyuk, (2008) evaluated three different blended professional development programs and found evidence to support the notion that blended learning is a promising mechanism for fostering teacher growth by providing aptly situated opportunities for practice. Additionally, their synthesis indicated that blended learning is a practicable way of altering teacher practice in targeted ways, building a sense of community, and improving student engagement.

**Approximations of Practice**

Further emphasizing the value of providing teachers with opportunities to practice, research substantiates the efficacy of practice-based professional education (Ball & Cohen, 1999), a model of professional growth in which novice teachers learn and rehearse high-leverage practices with the support of an expert teacher. Accordingly, the emphasis of teacher preparation programs has shifted from what teachers should know to what teachers should be able to do as professional educators (Ball, Sleep, Boerst, & Bass, 2009). Grossman, Compton, Igra, Ronfeldt,
Shahan, and Williamson (2009) call such “opportunities for novices to engage in practices that are more or less proximal to the practices of a profession,” *approximations of practice* (p. 2058). Field experiences, for instance, benefit pre-service teachers professionally and ultimately their students academically (McIntyre, Byrd, & Foxx, 1996).

Scholars stress the importance of contextualizing teaching for novice educators (Clarke & Hollingsworth, 2002; Darling-Hammond, Hyler, & Gardner, 2017), and practice-based teacher education has emerged as a promising model for improving teachers’ skills (Janssen, Grossman, & Westbroek, 2015). Moreover, Dalgarno and Lee (2010) assert that virtual learning environments can facilitate the “transfer of knowledge and skills to real situations through contextualization of learning” (p.21). Indeed, simulated environments can serve as innovative spaces for approximating practice in countless professions.

Mixed-reality simulations as instruments for professional development have been used and studied in a wide range of fields such as social work (Wilson, Brown, Wood, & Farkas, 2013), nursing (Farra, Miller, & Hodgson, 2015), pharmacy (Ambroziak, Ibrahim, Marshall, & Kelling, 2018), and the military (Stevens, Kincaid, & Sotilare, 2015). Teacher educators have likewise begun to explore the potential value of using mixed-reality simulation as a tool for training teachers (Billingsley & Scheuermann, 2014; Bradley & Kendall, 2014; Brown, 1999; Dieker, Rodriguez, Kraft, Hynes, & Hughes, 2013; Theelen, van den Beemt, & den Brok, 2019). Preliminary research indicates that, as Brown foretold in 1999, integrating simulation into teacher education can better prepare teachers by providing opportunities to put specific components of theory into practice, teach with immediate follow-up reflection and feedback, and navigate difficult situations, particularly as simulations become more realistic (Kaufman & Ireland, 2016; Keskitalo, 2011).
Affordances of Mixed-Reality Simulations in Teacher Education

As technology advances and the student population in the US grows increasingly diverse, virtual reality simulations and other mixed-media environments have emerged as potentially promising contexts for educator preparation. Simulations can provide opportunities that may not otherwise be ethical, feasible, or engaging for novice teachers. Inserting a pre-service teacher into a complicated situation that could result in liabilities, for example, would not be ethical, because students deserve to learn from a highly qualified teacher and the potentially harmful pressure on the novice teacher could undermine their developing self-efficacy. Jones (1999) posited that even in legal, widely used settings, whether within coursework embedded in a laboratory school or within a traditional field experience in a master teacher’s classroom, mistakes made by the teacher in training could negatively impact real students. However, some scholars postulate, when teachers practice with simulated students, there is no risk of harming real students. Of course, it is difficult to measure what teachers miss out on by teaching in a simulator rather than reality, and, given the long history of field experience as an integral component of teacher preparation, many scholars see little risk of “harm” and great possibility for teacher growth and student benefit in real practice.

Regarding feasibility, simulated environments can offer experiences “that would be impractical or impossible to undertake in the real world” (Dalgarno & Lee, 2010, p.19). In teacher preparation, for instance, matching all teacher candidates to high-quality field experiences in their target subject area and grade level is not always possible. Time and other logistical concerns pose challenges. For example, MRS enables teachers to practice with a range of avatar students without driving to different school campuses and allows them to practice at times during which real students may not be accessible (e.g., outside of K-12 school hours).
Murphy, Cash, and Kellinger (2018) note the difficulty of incorporating sufficient opportunities for practice into “already overflowing and ambitious syllabi” of education graduate courses (p.5), and vanLehn, Ohlsson, and Nason (1993) posit that “a teacher educator can more easily supervise and evaluate novice teachers… tutoring simulated students rather than human students” (p. 9). Additionally, teachers can pause in the middle of a simulation to think or request input or even start over if they would like. Particularly important given the increasing diversity of classes, simulations provide the opportunity to teach avatar students of varying personality profiles, grade levels, cultural backgrounds, abilities, interests, and behaviors, better equipping teachers to meet the various needs of all their future students, not just classes resembling that of their field experience.

Furthermore, its personalized and ludic nature makes mixed-reality simulation an engaging tool for teacher education (Hayes, Straub, Dieker, Hughes, & Hynes, 2013). Indeed, one of the learning affordances of virtual environments posited by Dalgarno and Lee (2010) is the ability to engage users and improve intrinsic motivation. Huang, Rauch, and Liaw (2010) explored why virtual reality learning environments often have a “strong motivational impact” (p.1179) on learners, and found that immersion, interaction, and imagination are three significant factors associated with the degree of motivation exhibited by a learner in a simulated environment. For these reasons, among others forwarded by early research substantiating the promise of mixed-reality simulations, teacher educators have begun to leverage this technology in professional development and teacher preparation programs to better support teachers.

Mixed-reality simulation (MRS) has likewise emerged as a potential tool for measuring teaching quality, as it is unique in its ability to provide teachers with a controlled environment for practicing instructional skills and teaching strategies. Some researchers have begun to use
simulated classrooms as a space for teachers to perform a particular skill in a given scenario (See Dieker, Hughes, Hynes, & Straub, 2017; Judge, Bobzien, Maydosz, Gear, & Katsioloudis, 2013; Pas et al., 2016; Peterson-Ahmad, 2018). Video-recorded simulations can then be shared with the teachers to serve as a focus for reflection and/or be scored by researchers using observation protocols to measure various teaching constructs. That is, MRS can be used as a kind of formative assessment to foster teacher growth or a summative assessment tool for research purposes. Trained simulation specialists help to ensure teachers have a consistent experience while striving to make avatar students engage interactively with a seemingly natural sense of spontaneity (Dieker, Hughes, & Smith, 2008). As the affordances of mixed-reality simulation align well with the practice-based teacher education model and fit within blended professional development, this study employs MRS as a means to freeze, measure, and refine instructional practices at the beginning and end of a blended learning program.

**Method**

Part of a larger, mixed-methods study of an ongoing five-year professional development project funded by the Department of Education Office of English Language Acquisition to prepare teachers to serve English learners (ELs) and earn English as a Second Language (ESL) supplemental certification, this study focuses specifically on the 2017-2018 teacher cohort (n = 47), the first full cycle of data collection after a pilot year of establishing partnerships with local non-profit organizations that serve ELs and building an infrastructure for reliable data collection for the subsequent years of the project. The federal grant provided participants with full tuition for two consecutive semesters of blended graduate-level coursework focused on culture, community, and EL instruction. Additionally, the grant reimbursed students the fees required to take the state ESL certification exam. This project served as an instrumental case (Stake, 1995)
providing insight into how blended university teacher education coursework may prepare teachers to serve ELs. Moreover, including both pre- and in-service teachers enabled me to explore and compare potential patterns of growth between the two groups. Specifically, I aimed to answer the following research questions:

RQ1: Do teachers demonstrate improvement in their quality of EL instruction after two semesters of blended coursework?

RQ2: Is the effect of the blended professional development program on quality of EL instruction different for pre-service teachers compared to in-service teachers?

RQ3: Is the effect of the blended professional development program on quality of EL instruction different for teachers assigned to the university compared to teachers assigned to the community site?

Context

The present study took place over the course of one academic year, beginning in August 2017 and ending in May 2018, in a major metropolitan area in the southwest United States where ELs represent 45% of the school district’s student population. Linguistically diverse families in the district speak more than 60 languages with Spanish being the most widely spoken language other than English. In order to meet the needs of the growing and diversifying community, 50 schools and non-profit organizations have partnered to support the school district’s students academically and socially. Joining this effort, our research team selected two community sites where nonprofit organizations offer after-school tutoring to local students. These sites were chosen for several reasons. First, they expressed eagerness to partner with us, and the project’s goals aligned with their mission. Second, they served English learners who could benefit from personalized language instruction. Third, they provided services during the early evening when
our courses would be held. Last, they offered sufficient space for teachers to tutor students in small groups and then debrief with their course instructor in an area separate from the children.

**Participants**

Pre- and in-service teachers not already certified to teach ESL were recruited from the university’s Master with certification program and from local K-12 schools to participate in the project. Following the grant’s pilot year, 2017-2018 cohort teachers who consented to participate in the project (90.38% of the 52 enrolled) comprised the sample (n = 47) for the present study. As shown in Table 1 which provides participant demographic data, 20 participants were already practicing teachers, 43 were female, and teachers’ number of years of experience ranged from 0 to 28 with a mean of 3.36 years, and teachers had a wide range of content areas of expertise and preferred grade levels.

Table 1

*Teacher Demographic Data*

<table>
<thead>
<tr>
<th></th>
<th>Community Site (n = 23)</th>
<th>University (n = 24)</th>
<th>Total (n = 47)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
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<td>1</td>
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</tr>
<tr>
<td>Female</td>
<td>20</td>
<td>23</td>
<td>43</td>
</tr>
<tr>
<td>Teaching Status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-service</td>
<td>11</td>
<td>16</td>
<td>27</td>
</tr>
<tr>
<td>In-service</td>
<td>12</td>
<td>8</td>
<td>20</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Years of Teaching Experience</td>
<td>4.13</td>
<td>2.63</td>
<td>3.36</td>
</tr>
</tbody>
</table>

**Assignment and Treatment**

All teachers were enrolled in the same series of two 3-hour blended graduate courses, but the pre-service teachers, followed by the in-service teachers, were randomly assigned to one of
two groups: 1) university or 2) community site. Teachers in the community group were then randomly assigned to one of two course sections that would attend class off campus weekly at a community site that served local ELs. The intention of this method of assignment was to ensure like ratios of pre-service to in-service teachers in each treatment group. However, teachers were randomly assigned before classes began, and 11 teachers did not attend orientation on the first night of class, resulting in their withdrawal from the program. All of these teachers (n = 11) who were dismissed from the project before the start of treatment were in-service teachers, and a disproportionate number (n = 10) were from the university group, so the groups had unparallel ratios of pre-service to in-service teachers at the beginning of the treatment. Of all enrolled teachers, the percentage who gave their consent for their data to be used for research was comparable for the groups, but the percentages of no-show in-service teachers in each group resulted in a differential attrition rate of .48. This is considered high by What Works Clearinghouse standards and may have biased the results. Nevertheless, given that the exclusion of subjects took place before the introduction of the intervention, I maintained that the data could reveal useful findings.

The community group (n = 23) tutored elementary students for 45 minutes under supervision followed by a two-hour debriefing and seminar-style class led by their instructor. Teachers in the university group (n = 24) received “business-as-usual” treatment: a seminar-style class that took place on campus at a small, private university. Teachers in both groups attended class at the same time on the same days and were assigned the same online modules to complete prior to class each week, as described below. The total amount of time spent face to face was equal. Besides the aforementioned differences between groups (i.e., location and opportunity to tutor ELs), by necessity of running the classes simultaneously, each section had a different
instructor of record. All three instructors were members of the research project team which met weekly to discuss the project. Two assistant professors serving as co-investigators of the project and I were the instructors. We collaborated weekly to discuss how to distribute class time, what kind of feedback we had received from teachers, and how to best align the three sections. For example, we created a common syllabus and assignments, including a mid-year written self-reflection, item analysis of a practice ESL certification exam, and an end-of-year written reflection focused on their pre- and post-year teaching snapshots which are described in the Measures section below.

**Online modules.** In the fall, all teachers were assigned the same sequence of 11 online modules focused on the four language skills (i.e., reading, writing, listening, and speaking) and on standards-based EL instruction. In the spring, all teachers completed a series of 10 online modules focused on diversity, EL assessment, and community and family partnerships. (See Appendix A for a complete list of module topics by semester.) Each module was designed to take approximately 1.5 hours to complete and comprised a variety of activities including interacting with multimedia, navigating online resources, assessing prior knowledge, preparing brief presentations, reading articles, creating student-facing instructional materials, applying knowledge to practice exam questions, writing reflections, and developing lessons. (See Appendix B for an example of one module’s interface outlining and linking to activities.) Modules had to be submitted prior to class each week, and some weeks students were assigned a task to complete and be prepared to present in the face-to-face class. The module topic also served as the theme of in-class discussion each week. The modules were intended to engage teachers in course content in ways that would build their theoretical understanding of language acquisition and instruction and add practical strategies to their teaching toolbox. This enabled
instructors to spend face-to-face time on deep discussion and putting their new knowledge into practice through instruction or rehearsals and role play.

**Embedded practice.** Teachers assigned to the community group received a binder of lesson plans centered on science and language to guide their tutoring sessions. Each week, they conducted a science investigation with their students, and all necessary supplies were provided for them. The lessons included activities such as making string telephones to study sound, describing and classifying rocks and minerals, exploring force by building straw rockets, and coding with Bee bots. Tutoring sessions took place the first 45 minutes of class each week, and the ratio of teachers to students was approximately 1:2.

Teachers in the university group had access and were introduced to the same lesson kits, but they chose to use lesson topics relevant to their own teaching assignments or aspirations during their approximations of practice in class. That is, when rehearsing teaching with their peers playing the role of students, an aspiring or in-service math teacher, for example, might choose double-digit addition as the lesson topic to demonstrate how a particular language objective could be embedded and addressed in content-area instruction.

**Data Collection**

Teachers demonstrated instruction in a simulated classroom for pretesting in the fall during the first week of class and post testing in the spring at the end of the second semester of coursework. Class was cancelled these two weeks, and instead, teachers selected a time slot to go through a planning-teaching-reflection cycle on the university campus in the mixed reality simulation (MRS) lab. Figure 1 displays the timeline of data collection and is followed by a detailed description of the planning-teaching-reflection cycle which served as the source of data collected both pre- and post- treatment.
Planning-teaching-reflection cycle. Each teacher checked in with the project coordinator upon arrival for their testing window on their night of pretesting and post testing. A member of the research team then escorted them into the planning room where they were given written and oral instructions regarding the lesson scope for the 10-minute teaching simulation, including lesson objectives, a list of what the avatars can and cannot do, and avatar student profiles. (See Appendices D-E.) Teachers had access to blank paper, large flip chart paper, markers, an academic text aligned with the lesson topic, posters of selected images enlarged from the text, and an iPad.

After 30 minutes of planning, each teacher was escorted into the MRS teaching lab where the simulated classroom was set up. Teachers were reminded of prompts for interacting with the simulator before beginning their lesson which was video recorded. After eight minutes of teaching in the simulated classroom, a member of the research team held up a two-minute warning sign. After ten minutes, the teacher was prompted to stop the simulation. Their teaching materials were then collected, and the teacher was escorted to an interview room where an interviewer and a semi-structured protocol guided their reflection on the teaching experience. All interviews were audio recorded and later transcribed. Phases of the planning-teaching-reflection cycle are detailed below.

Lesson scope. The research team developed two parallel MRS lesson planning protocols defining the 10-minute lesson scope for the teaching simulations. To align with the project’s aim to prepare teachers to imbed language instruction within content area lessons, we selected
science topics for the context of the simulated teaching. Given the fact that teachers had varying levels of science knowledge, we selected topics commonly taught in lower grades that did not require an extensive background in science. Additionally, the lesson protocols directed teachers to use their 10 minutes to provide students with a warm-up activity as part of a longer science lesson in which students would later read a non-fiction text including captioned photographs, diagrams, and comprehension questions. The lesson and accompanying text focused on how plants and animals depend on each other (Form A) or the role of food chains in an ecosystem (Form B). As shown in Appendix D, the protocols for both forms stated that the objectives for the 10-minute clip were to 1) build background knowledge and interest to prepare students to read the text, and 2) ensure that students speak in one or more complete sentences. The only difference between the two forms was the accompanying non-fiction text. Teachers who were assigned form A at pretesting, received form B for post testing, and vice versa. We created these parallel forms to avoid testing effects threatening the validity of results.

**Simulated environment.** For the teaching phase, teachers were escorted from the planning room into the MRS lab where they stood in front of a dry-erase board and faced a large monitor that displayed a simulated classroom. When they prompted the start of the simulation, five avatar students seated at their desks appeared on screen. The students were simulated according to the character profiles and language proficiency descriptors mentioned previously. The teacher interacted with the avatar students in real time and could refer to any of the given materials as if the students had access to them on their desks. While the simulation was designed to be as realistic as possible, there were some limitations (e.g., the avatar students cannot change seats or respond in chorus) that are explained to teachers during their planning phase. (See Appendix E.) To later examine instructional patterns and quantify the quality of teachers’ EL instruction, for
the duration of the simulation, a video camera captured the teacher from the students’ perspective. To ensure confidentiality, data were de-identified and all files were stored in an encrypted, password-protected, cloud-based system maintained by the university.

Instrumentation and Measures

The summer before implementing the full planning-teaching-reflection cycle with teachers who participated in the present study, three other members of the research team and I developed and piloted the MRS lesson planning protocol detailed above (see Appendix D) with a class of 12 students enrolled in a 3-credit course entitled Classroom Instruction and Assessment for Language Learners which I was teaching. The same course was one of the two courses the grant required all teachers participating in the project to take, making it an ideal context for testing and refining the protocol. This pilot served three purposes. First, it provided an opportunity to watch teachers use the MRS lesson planning protocol and field any related questions or concerns they had. The research team and I then revised the protocol to improve clarity in an effort to minimize threats to the construct validity of the planning-teaching-reflection cycle (Springer, 2010). Second, it enabled the simulation specialist to practice engaging with the content as the avatar students, become familiar with the lesson materials, and discuss possible student misconceptions that might arise during the lessons. Such practice aimed to improve the sense of authenticity of the simulation during testing. Third, it allowed the team of language experts to provide formative feedback to the simulation specialist whom we had recently trained to simulate students learning English as an additional language at an intermediate proficiency level. Specifically, although the character profiles of the avatar students remained the same as for other simulated classroom contexts, we worked with the simulation specialist to build out their language profiles according to the proficiency level descriptors defined by the English Language Proficiency Standards
(ELPS) (Texas Education Agency, 2016). (See Appendix C for a complete list of the intermediate proficiency level descriptors for each language skill according to the Texas Education Code.) These descriptors together with discussion of strengths and needs that are often common among ELs helped the simulation specialist to better portray ELs at an intermediate proficiency level. Requiring increased wait time before responding, misunderstanding idiomatic expressions or abstract academic vocabulary, and talking in short phrases unless scaffolding is provided are examples of the habits the simulation specialist worked to hone during the pilot.

**MRS observation protocol.** As the focus of the present study is quality of EL instruction exhibited by teachers in the MRS, we needed a measure that would capture key dimensions of EL instruction. Unfortunately, despite the increasingly large population of English learners in the US (U.S. Department of Education, National Center for Education Statistics, 2017), there is a lack of reliable measures of EL instruction quality (August, Estrada, & Boyle, 2012). According to the U.S. Department of Education, Office for Civil Rights (2018), “because federal law does not prescribe a particular program model or evaluation approach, the approach to, and design of, an effective ELL program evaluation will vary from district to district.” Districts are not universally equipped to handle such an endeavor, and so we are left with a wide range of tools and very few with evidence of validity or reliability. August, Estrada, and Boyle (2012) further expressed the problematic nature of the lack of measures of EL instruction when they asserted that “most current teacher-evaluation systems do not provide rubrics with examples to distinguish levels of teaching skill or performance. This lack of exemplars makes it particularly difficult for evaluators to validly and reliably rate teachers of ELLs because they are generally less familiar with effective methods for serving this population of students” (p.20).
Therefore, as part of this dissertation, I developed a measure that could help address this gap and attend to the novel context of using a simulation lab to capture teaching performance. Extant measures that have been developed and tested by researchers include the Classroom Quality for English Language Learners (CQELL) (Goldenberg, Coleman, Reese, Haertel, & Rodriguez-Mojica, 2012) which was designed for use in a lesson that comprises an entire class period and involves pre- and post- conferences between the teacher and evaluator. Due to time constraints and other logistics, teachers were limited to 10 minutes of instruction in the MRS lab, and holding pre- and post-conferences with each teacher was not feasible. Given our necessity of a tool that would measure the quality of teachers’ instruction for ELs within the bounds of a 10-minute approximation of practice in a simulated classroom, the research team and I decided to create a new observation protocol that is based in part on the CQELL rubric. We invited input from experts in language instruction and observation protocol development. To guide the work, we asked: What matters?, What would we expect to see in 10 minutes?, and What can be measured objectively and reliably? The group collaborated biweekly for eight weeks to brainstorm and operationally define dimensions and related descriptors that characterize high quality instruction for ELs. All ideas were combined and then reviewed to find overlapping or redundant descriptors. The resulting list of observable teacher behaviors was then categorized into overarching dimensions and drafted into three different formats to test usability.

Early drafts of the MRS observation protocol proved to be too unwieldy to complete in one viewing of an MRS teaching episode. With the ultimate goal of being able to use the same observation protocol in real time during future years with teachers at the community sites tutoring ELs, the research team and I trimmed, tested, and refined the protocol many times, eventually settling on a set of what emerged as the most objectively observable features of EL
instruction. As shown in Appendix F, the observation protocol used a Likert-type scale (1-5) to score eight specific categories on the extent to which they were evident and assign one holistic score capturing overall quality of language scaffolding.

In training two scorers with a background in teaching English as a Second Language in public K-12 schools who were blind to time point, group, and teaching status, I modeled how to use the protocol using a variety of sample video snapshots. When scorers had reached 80% interrater agreement, they began to score data from the teachers who participated in the project. This process involved coming together in front of a large monitor, and watching the deidentified videos in random order, other than the occasional delaying of a video if the same teacher had been scored on the other time point (baseline or end of year) already during that same scoring session. The intention was to avoid potential bias and prevent scorers from surmising which video was from which time point. Although this year of data collection served as a kind of pilot year for using and refining the MRS observation tool, it represents an important step toward building a reliable measure with sufficient validity evidences.

Data Analysis and Results

Next, I organize the description of analyses and findings by research question. I used the statistical software IBM SPSS Statistics 24 (2016) to conduct all statistical analyses, and I used the mean scores for each dimension of EL instruction measured with the MRS observation protocol in conducting the statistical analyses described next.

First, I ran descriptive statistics for the data to ensure they met the assumption of normality and confirmed that the data fell within the acceptable range of skewness and kurtosis (+/-2). On one hand, the MRS observation protocol was designed to measure specific, observable skills related to teaching ELs, so considering teachers were, per inclusion criteria, not certified
ESL teachers, one might not expect to detect baseline differences. However, some in-service teachers did have experience working with ELs, albeit without certification, and some of the instructional strategies important for supporting ELs that were measured in the MRS observational protocol may be beneficial to English-only students as well, so I expected in-service teachers to have higher scores than pre-service teachers at baseline in dimensions such as the extent to which the lesson was aligned with the content objective and how much a teacher’s questioning encouraged higher order thinking skills. To determine if the pre-service and in-service teachers were comparable at baseline and shed light on which dimensions might relate, I conducted a set of independent sample t-tests on the pretest data for the nine constructs measured using the MRS observation protocol (as shown in Appendix F), using teaching status as the grouping variable. Results indicated that there were not significant differences between pre- and in-service teachers at baseline in content objective alignment, \( t(45) = 1.06, p = .29 \), language objective alignment, \( t(45) = .21, p = .83 \), use of pairing, \( t(45) = .70, p = .49 \), connection to prior knowledge or personal experiences, \( t(45) = 1.13, p = .26 \), student response extension, \( t(45) = .99, p = .33 \), progress monitoring, \( t(45) = 1.02, p = .32 \), promotion of higher order thinking skills, \( t(45) = 1.02, p = .32 \), or overall linguistic scaffolding, \( t(45) = 1.02, p = .32 \). In one dimension, the use of visual support for directions or explicit language, in-service teachers scored higher than pre-service teachers, \( t(45) = 2.08, p = .04 \), but after correcting for multiple tests using Bonferroni correction for this family of hypotheses, the difference was not statistically significant.

Given these findings, the limited variation in scores, and the fact that descriptively, in-service teacher mean scores were higher in each dimension, I decided to sum dimension scores to create a total composite score for overall quality of EL instruction. Although differences for each
dimension were negligible, the aggregate difference could potentially yield greater variation and potentially useful findings.

**RQ1: Do teachers demonstrate improvement in their quality of EL instruction after two semesters of blended coursework?** The goal of the project was to prepare teachers to serve ELs effectively, so I anticipated that across groups, teachers would demonstrate improvement from the beginning to the end of the academic year in the EL instruction they provided during their simulated classroom teaching. To test this hypothesis and answer RQ1, I ran a paired sample t-test comparing pre- and post-intervention scores for the complete. This allowed me to examine whether participation in the project was associated with changes in scores in teachers’ overall quality of EL instruction as measured by the MRS observation protocol. Results of the dependent (paired) sample t-tests on the full sample suggested that teachers’ composite scores improved across the year to a degree approaching but not reaching statistical significance ($t(46) = 1.84$, $p = .07$).

**RQ2: Is the effect of the blended professional development program on quality of EL instruction different for pre-service teachers compared to in-service teachers?** Given the results of RQ1 and my original hypothesis that pre-service teachers would benefit more from the professional development program, in order to answer RQ2, I decided to select only the cases of pre-service teachers to see if, on average, their scores changed over time. I suspected that the in-service teacher data were acting as noise obscuring whatever pattern might characterize the pre-service teacher scores, so this seemed the prudent move, despite the already small sample size. Anything I might find with in-service teachers included would likely be spurious, so I selected pre-service teacher cases only for the following analyses.
All pre-service teachers (n = 27) comprised the resulting sample. To be sure I had sufficient statistical power to detect an effect, I ran a power analysis using G*Power. See result in Figure 2. As shown under output parameters, in order to detect an effect on the resulting sample (n = 27), assuming a .05 alpha level, the effect size would have to be medium to large. Results of the dependent (paired) sample t-tests indicated that pre-service teachers’ composite scores improved significantly across the year (t(26) = 2.92, p = .007). The statistical significance and low p-value prompted me to run one final family of dependent (paired) sample t-tests in an attempt to parse out which constructs in particular improved for pre-service teachers. Results indicated that pre-service teachers’ lesson clarity (mean score of dimensions 1a-1b from the MRS observation protocol) did not improve significantly across the year (t(26) = 1.78, p = .09). After using the Bonferroni correction for multiple tests, teachers’ questioning and feedback (mean score of dimensions 1g-1h) did not show significant improvement either (t(26) = 2.21, p = .04). Nevertheless, teachers’ linguistic scaffolding (mean score of dimensions 1c-1f) improved significantly across the year (t(26) = 3.82, p = .001). Likewise, teachers’ holistic score for linguistic scaffolding (dimension 2) was significantly higher at posttest (t(26) = 2.66, p = .013).
RQ3: Is the effect of the blended professional development program on quality of EL instruction different for teachers assigned to the university compared to teachers assigned to the community site? Next, to answer RQ3 and explore potential differences between groups over time, I planned to conduct a repeated measures ANCOVA with composite post-test score as the dependent variable, composite pre-test score as the covariate, and group assignment as the independent variable. Before proceeding, I tested the data to determine if all assumptions for conducting an ANCOVA test were met. Boxplots showed that there were no outliers in either group, so I proceeded to test the assumption that observations in the dependent variable were
normally distributed for each level of the independent variable. The Shapiro-Wilk test had a non-statistically significant result for the university group (p = .60) and the community site group (p = .79), and histograms depicted somewhat normal distributions. Given the non-significant result for Shapiro-Wilk and the fact that the ANCOVA test is robust to violations of normality, I proceeded despite the pattern shown in the histograms. Next, I used a matrix scatter plot to find out if there is a linear relationship between the covariate (baseline scores) and dependent variable (post-program scores) for each level of the independent variable (group assignment) Matrix scatter plots showed that the data violated this assumption, so I ended analyses there.

**Discussion and Implications**

Interpretation of results and related implications are explicated below. First, it is important to note that given the small sample size and therefore limited statistical power, there is potential for Type II error in conducting these t-tests. On the flip side, running multiples tests increases the likelihood of Type I error, even after using a correction for multiple tests (e.g., Bonferroni, Sidak). For these reasons, replicating this study with a larger sample would be beneficial. To this end, the project will gather data from the subsequent two cohorts and pool the data, increasing statistical power. Figure 3, for instance, shows that a total sample size of n = 128 will be necessary to detect medium effects using an ANCOVA that controls for baseline scores. Future research could also build on the present study by capturing teacher’s instruction at more than two time points, thus allowing for more sophisticated analyses and a more accurate picture of trends in teachers’ instruction across time.
Figure 3. Result of power analysis for an ANCOVA that tests for potential main effects and interactions of treatment (university versus community site) and teaching status (pre- versus in-service) using baseline scores as a covariate.

Regarding the first research question, results were not conclusive about whether teachers’ instructional quality, on average, improved after two semesters of the blended professional development program. To follow up, scholars could do a similar study with a higher dose of blended professional development to help determine the ideal balance of online activities and face-to-face time. Future research could also focus on refining the planning-teaching-reflection
cycle, lesson scope, and MRS observation protocol further to minimize construct-irrelevant variance and perhaps find an improved, expanded scale that allows for greater variation. Given that sufficient validity evidences have not been compiled for the MRS observation protocol, it is possible problems with the measure are obscuring effects of the program on quality of EL instruction. Potential issues undermining the validity of the tool include it being constrained to use with only 10 minutes of instruction. It could be that instruction must be observed for more than 10 minutes to capture a reasonable picture of a teacher’s abilities and pedagogical skill. It is also certainly possible that in an attempt to capture several characteristics of high-quality instruction for ELs and design a tool that could be used in any instructional setting, we failed to measure only discrete skills that are readily observable in a simulated environment. Similarly, the tool was not specifically aligned with particular course objectives or skills explicitly taught in class; rather, it was designed around general best practices for EL instruction which can be useful but may undermine the validity of this protocol as a measure of the effectiveness of coursework. Additionally, teachers never saw the observation protocol nor received any coaching regarding what behaviors they should demonstrate during their 10-minute clip. Adding to the planning protocol an explanation of what specifically will be measured would ensure teachers have a common operational definition of the behaviors of interest and encourage teachers to demonstrate those behaviors rather than other behaviors that may reflect good teaching but are not measurable with our protocol. Finally, although the two raters who were blind to class assignment reached sufficient interrater agreement (80%) on practice data before beginning to score actual data, there could be unknown patterns in the practice data that made scoring those videos more straightforward (and the scores more reliable) compared to the other video clips viewed and scored. One way to address this issue in part, and begin to collect validity evidences
for the MRS observation protocol, would be to conduct a factor analysis to determine if, for instance, the items intended to be indicators of the larger construct of linguistic scaffolding (i.e., using pairing, providing visual support, linking concepts to prior knowledge or personal experience, extending student responses) do, in fact, load onto the same factor as expected. This will require further data collection to have a sufficient sample size and will allow for exploration of the underlying constructs related to each specific behavior scored with the current tool.

Results regarding the second research question indicated that pre-service teachers did make significant gains from the beginning to the end of the year in linguistic scaffolding. It is unclear which components of the professional development program contributed to these gains, so future research could pursue clarification regarding the importance of the self-paced nature of the online modules, the interactive activities, the embedded opportunities for practice, or some other aspect. Also, looking more closely at the dimensions related to linguistic scaffolding may shed light on gaps in teacher education programs or provide guidance regarding how to implement a similar blended learning model in the future. Implications for practice include intentionally integrating blended learning and opportunities to practice into educator preparation programs. Practitioners could also work to strengthen instruction revolving around the dimensions in which teachers did not show significant improvement (e.g., questioning and feedback).

The third research question of the present paper remains unanswered due to the data’s statistical test assumption violation and limited statistical power, so future work could delve into group (university or community site) differences and a potential interaction with teaching status (pre-service or in-service). Returning to my original hypothesis, I would like to know if
opportunities for practicing teaching benefit pre-service teachers more than in-service teachers and how authentic practice with real ELs compares to approximations of practice.

**Limitations**

Several limitations should be considered when interpreting these findings. Besides the aforementioned problem of differential attrition that occurred before the start of data collection and treatment, the small final sample size restrained the use of a more sophisticated test that might better detect patterns, including interaction effects. Moreover, the lack of covariates prevented some otherwise useful statistical models from being specified, and represents a missed opportunity to calculate the extent to which variance could be explained by various other predictors such as age, gender, knowledge of a second language, and past experience working with ELs.

With regard to the professional development program itself, while course instructors intended to provide a similar experience in the program courses, every instructor has their own style and level of rapport, so differences between instructors could provide substantively distinct experiences for teachers. Likewise, differences in the children served and resources available at the after-school tutoring sites could provide different opportunities and challenges for the teachers in those course sections.

Additionally, the topics of tutoring lessons and the MRS planning-teaching-reflection cycle came from science curriculum and standards. Although the intention was to provide teachers with the opportunity to embed language instruction into subject area content and offer students dynamic hands-on activities to engage them after a long day of school and tutoring, science proved to be a difficult subject area to explain without deep content knowledge, so
teachers with a science background certainly had an advantage over those without science expertise.

In addition to the potential problems regarding the protocol detailed above, with respect to the MRS planning-teaching-reflection cycle, lesson scope, and observation protocol, threats to construct validity must also be considered. Many outside constructs were certainly at play as teachers demonstrated teaching ELs in the simulated classroom, so we may not have actually measured what we intended to measure. For example, the planning part of the cycle was restrained to 30 minutes, so in some ways, it tested whether teachers could plan quickly and with limited supplies at hand. Also, some people feel nervous about teaching in a simulated setting or being video recorded, so their performance in the simulator might not reflect their typical instruction. For any teacher, on some level, although not the focus of the evaluation, we assessed whether teachers could quickly gear up to teach five students they do not know, readily leverage the affordances of the technology, and teach a topic they may not know well.

**Conclusion**

The findings from the present study indicated that blended graduate coursework is a viable learning model of professional development for teachers working toward ESL certification. Pre-service teachers, in particular, benefited from the blended professional development program, chiefly with respect to linguistic scaffolding. The differential growth of pre- versus in-service teachers, regardless of group assignment, could be evidence supporting the separation of the two groups and provide insight into how we might improve the courses for future cohorts. Future work should examine potentially more nuanced patterns of change in teacher’s EL instruction over time as it relates to components of blended learning.
References


National Education Association. (2015). Understanding the gaps: Who are we leaving behind and how far. *NEA Education Policy and Practice & Priority Schools Departments and*
Center for Great Public Schools. https://www.nea.org/assets/docs/18021-Closing_Achve_Gap_backgrndr_7-FINAL.pdf


Appendix A

Example of a Course Homepage with Online Module Topics Listed

<table>
<thead>
<tr>
<th>Files</th>
<th>Tech check: <a href="#">click here</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>Syllabus</td>
<td></td>
</tr>
<tr>
<td>Outcomes</td>
<td></td>
</tr>
<tr>
<td>Quizzes</td>
<td></td>
</tr>
<tr>
<td>Modules</td>
<td></td>
</tr>
<tr>
<td>Conferences</td>
<td></td>
</tr>
<tr>
<td>Collaborations</td>
<td></td>
</tr>
<tr>
<td>Attendance</td>
<td></td>
</tr>
<tr>
<td>Chat</td>
<td></td>
</tr>
<tr>
<td>SCORM</td>
<td></td>
</tr>
<tr>
<td>Student Course Evaluations</td>
<td>Module 1 - <a href="#">Introduction</a></td>
</tr>
<tr>
<td></td>
<td>Module 2 - <a href="#">Standards-Based &amp; Developmentally Appropriate Language Instruction</a></td>
</tr>
<tr>
<td></td>
<td>Module 3 - <a href="#">Structure of English</a></td>
</tr>
<tr>
<td></td>
<td>Module 4 - <a href="#">How Children Learn Language</a></td>
</tr>
<tr>
<td></td>
<td>Module 5 - <a href="#">Communicating with Parents</a></td>
</tr>
<tr>
<td>Admin Course Evaluations</td>
<td>Module 6 - <a href="#">Listening &amp; Speaking Overview</a></td>
</tr>
<tr>
<td>Library Help</td>
<td>Module 7 - <a href="#">Listening</a></td>
</tr>
<tr>
<td>My Media</td>
<td>Module 8 - <a href="#">Speaking</a></td>
</tr>
<tr>
<td>Media Gallery</td>
<td>Module 9 - <a href="#">Reading &amp; Writing Overview</a></td>
</tr>
<tr>
<td>Feedback Box</td>
<td>Module 10 - <a href="#">Reading</a></td>
</tr>
<tr>
<td></td>
<td>Module 11 - <a href="#">Writing</a></td>
</tr>
</tbody>
</table>

![Image Credit: Markus Koijonen (ikif/markus.koijonen)](image_url)
Appendix B

Example of a Module Launchpad with Links to Assignments

<table>
<thead>
<tr>
<th>Component</th>
<th>Tasks</th>
<th>Estimated Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LEARN</strong></td>
<td><strong>We Need Your Help!</strong>&lt;br&gt;- Watch the short video and provide feedback.</td>
<td>10 minutes</td>
</tr>
</tbody>
</table>
|                    | Launching into Literacy (Learning Objectives)<br>In this module students will:<br>  
  • Identify the first stages of emergent literacy development in language learners.<br>  
  • View and critique examples of small group literacy instruction to identify strategies that are linguistically grounded.<br>  
  • Practice sample items from the ESL Certification Exam through a think-aloud protocol. | 3 minutes         |
| **EXPLORE**        | **EXPLORE: Setting the Stage**<br>Your choice!<br>  
  - Read pp. 79-89 or<br>  
  - Watch this video bring the book to life! | 15 minutes        |
|                    | **EXPLORE How to Teach Phonemic Awareness for ELs**                     | 5 minutes         |
|                    | **EXPLORE How to Teach Morphemes for ELs**                             | 5 minutes         |
|                    | **EXPLORE Take Two of Surprise Book**                                  | 10 minutes        |
| **APPLY / ASSESS** | **APPLY Your Knowledge: Try These ESL Test Items with Me!**           | 15 minutes        |
| **REFLECT / RESPOND** | **REFLECT on Your Learning: 3-2-1 (Comment, Collaborate, Create)**  
  - Complete the 3-2-1 activity in your reflection log<br>  
  - Submit module feedback | 20 minutes         |
| **INTEGRATE**      | **eNgage with Your Community**<br>- Participate actively in class to apply information to case studies and/or to work with EL students | Face-to-face      |
Appendix C

Intermediate Proficiency Level Descriptors as Defined by the English Language Proficiency Standards of the Texas Education Code (Texas Education Agency, 2016)

Chapter 74. Curriculum Requirements
Subchapter A. Required Curriculum
§74.4. English Language Proficiency Standards.

(d) Proficiency level descriptors.

(1) Listening, Kindergarten-Grade 12. ELLs may be at the beginning, intermediate, advanced, or advanced high stage of English language acquisition in listening. The following proficiency level descriptors for listening are sufficient to describe the overall English language proficiency levels of ELLs in this language domain in order to linguistically accommodate their instruction.

(B) Intermediate. Intermediate ELLs have the ability to understand simple, high-frequency spoken English used in routine academic and social settings. These students:

(i) usually understand simple or routine directions, as well as short, simple conversations and short, simple discussions on familiar topics; when topics are unfamiliar, require extensive linguistic supports and adaptations such as visuals, slower speech and other verbal cues, simplified language, gestures, and preteaching to preview or build topic-related vocabulary;

(ii) often identify and distinguish key words and phrases necessary to understand the general meaning during social and basic instructional interactions that have not been intentionally modified for ELLs; and

(iii) have the ability to seek clarification in English when failing to comprehend the English they hear by requiring/requesting the speaker to repeat, slow down, or rephrase speech.

(2) Speaking, Kindergarten-Grade 12. ELLs may be at the beginning, intermediate, advanced, or advanced high stage of English language acquisition in speaking. The following proficiency level descriptors for speaking are sufficient to describe the overall English language proficiency levels of ELLs in this language domain in order to linguistically accommodate their instruction.

(B) Intermediate. Intermediate ELLs have the ability to speak in a simple manner using English commonly heard in routine academic and social settings. These students:
(i) are able to express simple, original messages, speak using sentences, and participate in short conversations and classroom interactions; may hesitate frequently and for long periods to think about how to communicate desired meaning;

(ii) speak simply using basic vocabulary needed in everyday social interactions and routine academic contexts; rarely have vocabulary to speak in detail;

(iii) exhibit an emerging awareness of English grammar and speak using mostly simple sentence structures and simple tenses; are most comfortable speaking in present tense;

(iv) exhibit second language acquisition errors that may hinder overall communication when trying to use complex or less familiar English; and

(v) use pronunciation that can usually be understood by people accustomed to interacting with ELLs.

(4) Reading, Grades 2-12. ELLs in Grades 2-12 may be at the beginning, intermediate, advanced, or advanced high stage of English language acquisition in reading. The following proficiency level descriptors for reading are sufficient to describe the overall English language proficiency levels of ELLs in this language domain in order to linguistically accommodate their instruction.

(B) Intermediate. Intermediate ELLs have the ability to read and understand simple, high-frequency English used in routine academic and social contexts. These students:

(i) read and understand English vocabulary on a somewhat wider range of topics and with increased depth; vocabulary predominantly includes:

(I) everyday oral language;

(II) literal meanings of common words;

(III) routine academic language and terms; and

(IV) commonly used abstract language such as terms used to describe basic feelings;

(ii) often read slowly and in short phrases; may re-read to clarify meaning;

(iii) have a growing understanding of basic, routinely used English language structures;
(iv) understand simple sentences in short, connected texts, but are
dependent on visual cues, topic familiarity, prior knowledge, pretaught
topic-related vocabulary, story predictability, and teacher/peer assistance
to sustain comprehension;

(v) struggle to independently read and understand grade-level texts; and

(vi) are able to apply basic and some higher-order comprehension skills
when reading texts that are linguistically accommodated and/or simplified
for this level.

(6) Writing, Grades 2-12. ELLs in Grades 2-12 may be at the beginning, intermediate,
advanced, or advanced high stage of English language acquisition in writing. The
following proficiency level descriptors for writing are sufficient to describe the overall
English language proficiency levels of ELLs in this language domain in order to
linguistically accommodate their instruction.

(B) Intermediate. Intermediate ELLs have enough English vocabulary and
enough grasp of English language structures to address grade-appropriate writing
tasks in a limited way. These students:

(i) have a limited ability to use the English language to express ideas in
writing and engage meaningfully in grade-appropriate writing assignments
in content area instruction;

(ii) are limited in their ability to develop or demonstrate elements of
grade-appropriate writing in English; communicate best when topics are
highly familiar and concrete, and require simple, high-frequency English;
and

(iii) exhibit writing features typical at this level, including:

(I) simple, original messages consisting of short, simple sentences;
frequent inaccuracies occur when creating or taking risks beyond
familiar English;

(II) high-frequency vocabulary; academic writing often has an oral
tone;

(III) loosely connected text with limited use of cohesive devices or
repetitive use, which may cause gaps in meaning;

(IV) repetition of ideas due to lack of vocabulary and language
structures;
(V) present tense used most accurately; simple future and past tenses, if attempted, are used inconsistently or with frequent inaccuracies;

(VI) undetailed descriptions, explanations, and narrations; difficulty expressing abstract ideas;

(VII) primary language features and errors associated with second language acquisition may be frequent; and

(VIII) some writing may be understood only by individuals accustomed to the writing of ELLs; parts of the writing may be hard to understand even for individuals accustomed to ELL writing.
Appendix D

MRS Lesson Planning Protocol

You have 30 minutes to plan an 8-10 minute mini-lesson for intermediate-level English Learners.

You will not be graded on this activity. We are interested in learning about how you plan for, teach, and reflect on teaching English learners so that we can support your learning this year in Project CONNECT. After the teaching session, you will have a one-on-one conversation with us to talk about your teaching background and your ideas and learning goals for the class.

Objective: In your 8-10 minutes of teaching the avatar children, your objective will be to build background knowledge so that your five students are prepared to begin reading the short science text included in this packet. You are not expected to teach the full text! Consider your mini-lesson a warm-up activity and an opportunity to encourage your students to use oral English.

Context: Imagine that you have just returned from Thanksgiving break. Therefore, it is a time in the semester when you and the students already know one another. Use whatever strategy or combination of strategies you can to support your English learners as they get ready to read this text. In this imagined scenario, the full lesson would be 60 minutes, and they would be reading the text with you during that longer time frame. But again—your task is only to focus the first 8-10 minutes of this larger imagined amount of time on preparing them to get ready to read and comprehend the text. There are no right or wrong approaches! There are many, many ways to teach this mini-lesson!
## Appendix E

MRS Instructions and List of What Avatar Students Can and Cannot Do

### Mursion Children

<table>
<thead>
<tr>
<th>CAN:</th>
<th>CANNOT:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• See/Hear You</td>
<td>• Choral Response</td>
</tr>
<tr>
<td>• Respond in Real Time</td>
<td>• Stand up</td>
</tr>
<tr>
<td>• Pair &amp; Share</td>
<td>• Change Seats</td>
</tr>
<tr>
<td>• Misbehave</td>
<td>• Repeat requested physical gestures ie:</td>
</tr>
<tr>
<td>• Write on their tablets</td>
<td>‘Simon Says’ activities</td>
</tr>
<tr>
<td>• Raise their hands</td>
<td></td>
</tr>
<tr>
<td>• Use their cell phone</td>
<td></td>
</tr>
</tbody>
</table>

### To Use Mursion:

- To begin a simulation, say: ‘Begin classroom.’
- To end a simulation, say: ‘End classroom.’
- To pause a simulation, say: ‘Pause classroom.’
- When you are ready to resume, say: ‘Resume classroom.’ The simulation will continue where you left off.

### Key Phrases from the Children:

- “Principal says we can’t do that.” This means you have asked them to do something they cannot physically perform. Accept the response and move on.
- “I have to go to the bathroom” This means we are experiencing technical difficulties. Please stand by for further instruction.
## Appendix F

### MRS Observation Protocol

Date: ____________________  Video #: __________  Rater: ________________________________  Initials: _______

<table>
<thead>
<tr>
<th>VRS English Learner Instruction Observation Protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Skills incorporated</strong></td>
</tr>
<tr>
<td><strong>Construct</strong></td>
</tr>
<tr>
<td>1. How much does the:</td>
</tr>
<tr>
<td>a) Lesson align with given content objective?</td>
</tr>
<tr>
<td>b) Lesson align with given language objective?</td>
</tr>
<tr>
<td>c) Teacher use pairing to provide opportunities for language use?</td>
</tr>
<tr>
<td>d) Teacher provide visual support* for directions or explicit language?</td>
</tr>
<tr>
<td>e) Teacher link language or concepts to prior knowledge or personal experiences?</td>
</tr>
<tr>
<td>f) Teacher extend student responses?</td>
</tr>
<tr>
<td>g) Teacher monitor student progress on tasks and understanding?</td>
</tr>
<tr>
<td>h) Teacher promote higher order thinking skills?</td>
</tr>
</tbody>
</table>

2. What is the overall quality of the teacher’s linguistic scaffolding for ELs? | **Low** | **Medium** | **High** |
| | 1 | 2 | 3 | 4 | 5 |

*Visual supports could be body language, pictures, graphic organizers, written language, etc.
Chapter V: Conclusion

In summary, this three-article dissertation examined three different approaches to supporting ELs by leveraging technology. Framed by the third generation of CHAT, this research illuminates ways different stakeholder groups within varying activity systems support ELs, by examining technology as 1) an instructional tool in the classroom, 2) a mechanism for family engagement, and 3) a means for preparing teachers to serve ELs. Results suggest that teachers, parents, and teacher educators can use technology as a mediating instrument to reach their own distinct objectives and often connect to another subject-object relationship. As shown in Figure 2, these activity systems interact in pursuit of a shared outcome—supporting ELs.

All three studies offer insight into the interconnectedness of parents’, teachers’, and teacher educators’ efforts to support ELs on a mission to close achievement gaps. All three education stakeholder groups leveraged technology for their intended purposes with some success, and explicit instruction about technology use periodically emerged as necessary in the process. For example, in the online adolescent EL mentoring project, teachers sometimes had to model for students how to use an online tool required to complete an assignment. Likewise, in the blended professional development program, explicit instruction regarding how to navigate certain online platforms was necessary at various points throughout the course. These subsystems of activity that emerged within the original model are depicted in the revised model displayed in Figure 2 as an added layer of activity that mediated teachers’ enactment of their original object—effective language instruction for ELs—and teacher educators’ goal of providing effective professional development for teachers of ELs and reliable measurement of quality of EL instruction.
Figure 2. Revised model of interrelatedness of research comprising this dissertation framed by Engeström’s (1987; 2001) activity system model.
These additional microsystems that emerged within the focal activity systems may be considered problematic as they require additional, often unexpected, investment of time and energy in pursuit of the original goal, but they may also be valued as relevant learning opportunities. In both cases, the learners (ELs in the bottom left triangle and teachers in the bottom right triangle) received timely, contextualized instruction regarding technology tools that were useful in their lives. As a result, they gained additional skills beyond those outlined in the course objectives and curriculum standards.

The age, cultural background, and socioeconomic status of the students, parents, teachers, and teacher educators who interacted with technology within the three focal activity systems varied tremendously with no apparent pattern of facility of use, thus disrupting common perceptions of a digital divide in the access to, use of, and comfort level with technology. In all three cases, several different technology tools, especially online applications, were employed, and the fluidity with which subjects generally navigated from one tool to the next was noteworthy.

**Limitations**

While these findings shed light on subjects, objects, mediating instruments, and shared outcomes, one limitation of this dissertation is the exclusion of information regarding other components of Engeström’s (1987; 2001) activity system model. That is, these studies focus on the top half of the triangular models, leaving much to learn regarding the community, rules, and dimensions of labor that also contextualized activity leading to EL support. Additionally, as technology was the mediating artifact of interest, other important instruments for achieving the desired outcome of an activity may have been overlooked, such as curriculum materials and even language.
With the ultimate goal of providing equitable education for ELs, this study is also limited in that none of these studies measure student achievement directly and systematically. To strengthen the basis for technology integration for supporting ELs and their teachers and families, student-level data regarding student achievement, for example, are required. Having comprehensive longitudinal data regarding student scores and demographics would help paint a more complete picture of effective activity systems for helping ELs have the same opportunities as their peers. Findings from the analyses of such data could inform future policy and practice and substantiate calls for further investment in technology initiatives, infrastructure, and related training.

Time also emerges as a restraining factor in two ways. First, each of the three studies spanned approximately one year or less, a relatively short period of time in consideration of the larger backdrop of students’ educational trajectories and the societal shift toward technology integration. Sustained study of activity systems aiming to support ELs would provide greater insight into which ways and to what extent technology may mediate successful mitigation of inequities in education for ELs. Longitudinal data could help us understanding distal outcomes related to technology use and gauge whether current findings replicate across time. Second, the delayed nature of the dissemination of research findings is particularly problematic in regard to work focused on technology, because by the time data is collected, analyzed, interpreted, and communicated, the technology used in the study may already be obsolete. Because technology is constantly evolving and new tools continue to emerge, it is important that research findings make their way into the literature base in time to be incorporated and ideally, extended with follow-up research while the instruments of interest are still relevant.
Future Directions

Implications emerge from the findings of each study individually, as defined in each of the three manuscripts, as well as from the collective results of all three. I will now synthesize the findings from this three-article dissertation framed by CHAT and Engeström’s (1987; 2001) model and outline implications for practice, policy, and future research.

Implications for Practice

The findings prompt me to make several recommendations for education practitioners. First, educators, including teachers and school leaders, should answer the calls laid out in the National Education Technology Plan (US DOE, 2017) and Advancing Educational Technology in Teacher Preparation (Stokes-Beverley & Simoy, 2016) and model for others the power of technology in supporting students. Additionally, based on the findings across studies one and three, when planning to integrate technology, teachers and school leaders should expect to spend some time coaching learners in how to use technology or troubleshooting any technical issues that arise. With this expectation, the necessity for additional layers of activity in pursuit of a goal will not seem as disruptive.

Implications for Policy

Given the distributed nature of support that benefits students, policymakers should strive to draft policies with clear goals for multiple stakeholder groups. Some policies, such as the National Educational Technology Plan (2017) already do this, but there are no accountability measures to ensure stakeholders collaborate with a common vision and monitor impact of their initiatives. Building an infrastructure for collaboration and sharing resources could cultivate a community of learning in which each stakeholder group is connected, respected, and working toward a shared goal.
Implications for Research

Scholars have an important role in guiding future technology initiatives by contributing to the current knowledge base around technology integration and disseminating the work in an accessible and timely manner. Future work should examine patterns of teachers’ quality of EL instruction in a variety of technology-rich professional development programs. Researchers should also seek to measure student outcomes in relation to technology use and consider ways to better incorporate parent perspectives and student voice into research on technology use. Finally, studying cases in which various stakeholder groups simultaneously and knowingly work toward supporting ELs systematically would provide unique insight into the broader landscape of interconnected activity systems directed at supporting ELs. In this way, policy makers and practitioners can set a vision based on evidence and confidently take strides toward its realization.

Conclusion

Although much remains ambiguous regarding the future of education and the achievement of ELs, one thing is clear: stakeholder groups can simultaneously make strides toward achieving educational equity for ELs, and a closer look at how these activity systems interact could shed light on a more collective and cohesive plan for meeting students’ needs. Technology will be an integral component of offering effective support to ELs and gleaning useful information from the experience. ELs as well as their families, teachers, and school leaders should work together to ensure ELs have cohesive support and access to technology that may foster their growth. Teacher educators should collaborate with teachers and school leaders to provide relevant and rigorous training regarding EL instruction, and policy makers should
provide structure and resources for everyone to achieve the common goal of supporting ELs and cultivating equity.
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https://doi.org/10.1080/13639080020028747

821-839.


