Secondary Content Teachers' Implementation of Professional Learning About Quality Interactions for English Learners

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by

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Abstract

A significant aspect of English learners' language development process entails their participation in quality interactions about academic content during classroom instruction. The 2019 program evaluation of the English Language Development Office in County Public Schools (CPS), a public school district in the mid-Atlantic region of the United States, indicated that English learners in CPS secondary schools infrequently engaged in quality interactions with classmates. To address the lack of quality interactions in academic discourse during content instruction, CPS facilitated professional learning for secondary content teachers about quality interactions for English learners. This sequential, mixed methods research study investigated the extent to which CPS secondary core content teachers transferred the quality interactions professional learning to their classroom instruction, as well as factors that facilitated or hindered this transfer of learning. Surveys, classroom observations, and interviews provided data about teachers' implementation of their professional learning. Analysis of the data led to five findings. First, teachers reported varying levels of implementation of the quality interactions professional learning. Second, the level of implementation teachers reported did not necessarily align with classroom observations. Third, the design of teachers' professional learning appeared to be related to their classroom implementation. Fourth, teachers' beliefs might have supported and hindered the transfer of their professional learning to classroom instruction. Fifth, the demands of teaching could have hindered the transfer of teachers' professional learning to their classroom instruction. Recommendations about how to proceed with the quality interactions professional learning initiative in CPS are based on these findings.

Keywords: academic discourse, English learners, implementation, professional learning, student interactions

Chapter 1: Introduction

Across the United States, students are learning the English language simultaneously along with the content of their courses. Some of these students are labeled English learners[1] due to their developing English language proficiency, as measured by standardized English language proficiency tests (Every Student Succeeds Act, 2015; State Department of Education, 2021). Many English learners' content learning is progressing more slowly than their school districts would like (Ross & Fisher, 2009). One potential cause of this rate of academic achievement is that English learners are still developing the English language skills needed to succeed in school settings (Collier, 1995; Snow & Uccelli, 2009). To improve upon the equity of classroom instruction for English learners, all of their teachers, not only the language development specialists, must acknowledge and address students' language learning needs (Bacon, 2020; Molle, 2021). While it might be advantageous for teachers to engage in professional learning about the role of language instruction in furthering English learners' access to content instruction (Molle, 2021), teachers' implementation of such professional learning during their classroom instruction does not occur constantly (Bacon, 2020; Chang-Bacon, 2020; Molle, 2021; Wilkinson et al., 2017).

Defining the Problem

County Public Schools (CPS), a medium-sized public school district in the mid-Atlantic region of the United States, has evidence of a difference in achievement between students identified as English learners and students without this designation[2]. As of the fall of 2020[3], approximately one quarter of

[1]There exists terminology that is more asset-based in connotation to describe such students, yet this paper uses the term *English learners* to remain consistent with the terminology used by a particular school district, County Public Schools (CPS).

[2] Students who are not designated as English learners include students who do not speak a language other than English, students who are multilingual but who did not qualify for English language development services based on an English proficiency screener score, and students who used to receive English language development support but no longer qualify for those services due to demonstrating a high level of English proficiency as measured by an English proficiency test.

[3] More recent data is unavailable due to the impact of the COVID-19 pandemic.

students in CPS were identified as English learners (State Department of Education, n.d.). Compared to school districts elsewhere in the state, CPS students as a whole show strong performance on statewide accountability exams. Meanwhile, English learners consistently score lower on these exams compared to the overall population of students in CPS for all tested subjects and grade levels (State Department of Education, n.d.). On average, 78% of CPS secondary students as a whole passed statewide accountability content exams between 2019 and 2021[4] (State Department of Education, n.d.). In comparison, an average of 35% of CPS secondary students identified as English learners passed the exams during that same time period. These pass rates suggest strong academic performance for CPS students overall, but they also point to a gap in performance between the general student population and English learners in CPS.

A program evaluation conducted by WestEd provides additional data relevant to the gap in performance for English learners in CPS. A significant finding of the 2019 CPS English Learner Program evaluation related to quality interactions, which are interactions that involve the "sustained joint construction of knowledge" (Walqui, 2010, p. 26) between English learners and their peers while they engage in discourse about academic content. It is critical for English learners to engage in quality interactions to develop their proficiency in English and to understand academic content at a deep level (Gibbons, 2015), yet English learners interacted with their peers in a sustained, reciprocal manner in only 13% of secondary classrooms during academic instruction (WestEd, 2019). The CPS English Learner Program evaluation recommended professional learning for teachers, to include topics such as facilitating quality interactions (WestEd, 2019), because professional learning is likely to improve teachers' ability to engage their students in quality interactions during classroom instruction (Wilkinson et al., 2017).

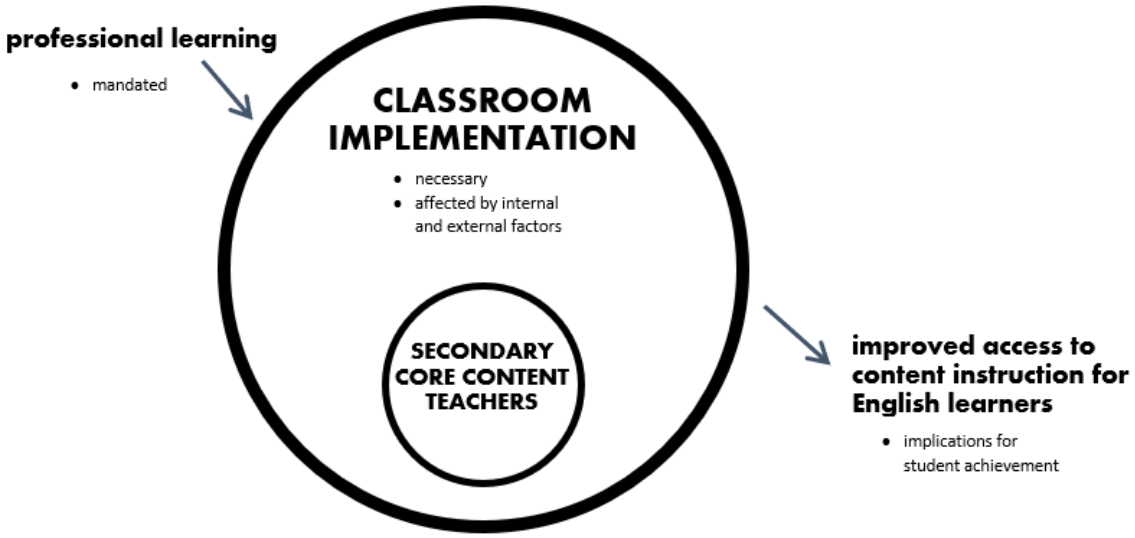
[4] Data for the 2019-2020 school year is unavailable due to the impact of the COVID-19 pandemic.

Since the spring of 2021, CPS has been leading professional learning for secondary core content teachers about quality student-to-student interactions with the goal of improving instruction in content classes for English learners. CPS chose to focus on providing professional learning to secondary core content teachers due to a settlement agreement between CPS and the U.S. Department of Justice (United States Department of Justice, 2019). The settlement agreement required CPS to provide secondary core content teachers with professional learning about sheltered content instruction, which is a "method for teaching ELs [English learners] grade-level core content… in English by integrating English language and literacy development into content area instruction" (United States Department of Justice, 2019, p. 3). The teachers chose from among a variety of sheltered content instruction professional learning offerings, including quality interactions options, depending on their interests. Although the quality interactions professional learning itself was not mandatory to attend, secondary core content teachers in CPS were required to complete a total of 30 hours of professional learning about sheltered content instruction by the end of the 2021-2022 school year.

The professional learning about quality interactions that CPS continues to offer aims to improve teachers' ability to use techniques in their classrooms that encourage deep, rigorous conversations among students about academic content. Additionally, a key component of the quality interactions professional learning initiative is to develop students' English language skills throughout their academic day, rather than just during their English class. For meaningful change to take place in the presence of quality interactions during secondary classroom instruction, it is important for teachers to implement what they learn from the quality interactions professional learning. However, CPS has yet to establish whether teachers are transferring the content of the quality interactions professional learning to their classroom instruction.

Figure 1:

Conceptual Framework



Conceptual Framework

This research study is based upon a conceptual framework (see Figure 1.1) that links the problem of practice to a wider organizational and educational context. The conceptual framework begins with some organizational context about professional learning. In the evaluation of the CPS English Learner Program, WestEd (2019) strongly recommended that CPS provide teachers with professional learning about quality interactions, and the Department of Justice also mandated professional learning for teachers with the hope of improving classroom instruction for English learners (United States Department of Justice, 2019). Due to the recommendation and mandate from outside stakeholders, CPS assumed that the root cause of infrequent quality interactions was a need for professional learning for teachers. Research suggests that professional learning for teachers about quality interactions and language instruction in the content classroom supports English learners' participation in student-to-student discourse about content concepts (Molle, 2021; Wilkinson et al.,

2017). Based on the strength of the recommendation from the program evaluation (WestEd, 2019) and supported by existing research (Wilkinson et al., 2017), CPS assumed that professional learning about quality interactions for teachers would be worthwhile; therefore, CPS has offered secondary core content teachers professional learning about engaging their English learner students in quality interactions. Whether the content of the professional learning aligns with the body of research on quality interactions is not within the scope of this study. Furthermore, the professional learning itself is not the core of the conceptual framework, yet its connection to the problem of practice is nonetheless relevant.

Central to this study, instead, is the concept of classroom implementation of teachers' professional learning. Classroom implementation of the ideas that teachers have learned is a necessary part of the professional learning process (Darling-Hammond et al., 2017; Knight, 2021). A variety of factors, both internal and external to teachers and schools, can affect teachers' ability or willingness to implement the content of their professional learning. Some examples of these factors include educational policies (Chang-Bacon, 2020), organizational support (Clement & Vandenberghe, 2001; Hawley & Valli, 1999; Penner-Williams et al., 2017; Riordan et al., 2019), availability of time (Herrington et al., 2009; Knight, 2021), sustained duration of the professional learning (Darling-Hammond et al., 2017; Wilde, 2010), and teachers' perspectives and attitudes (Kennedy, 2019; Klein & Riordan, 2009; Molle, 2021; Yang et al., 2020). This piece of the conceptual framework will be the focus for my research as I seek to understand teachers' transfer from professional learning to instructional practice.

For this research study, secondary core content teachers are at the core of classroom implementation. These teachers are meant to be implementing what they learned through their participation in the quality interactions professional learning initiative within CPS, keeping in mind that the purpose of their implementation is to cause quality interactions among English learners and their

peers to be occurring more frequently. Without the teachers' involvement, classroom implementation of the quality interactions professional learning could not occur.

Related to this research, but not within its scope, is the potential outcome of teachers' implementation of the quality interactions professional learning. This conceptual framework relies on the assumption that more frequent quality interactions among English learners and their classmates will improve English learners' access to content instruction due to increased opportunities to develop disciplinary language (Ardasheva et al., 2016; Haneda, 2017; Hansen-Thomas, 2009; Thompson, 2008). Greater access to the content instruction of courses could have implications for student achievement, with the assumption that a higher frequency of quality interactions would have a positive effect on the academic performance of English learners. It is important to note that there are a variety of factors that can affect English learners' access to content instruction, such as connecting instruction with their background knowledge, teaching key vocabulary, and presenting the content in a way that is comprehensible to them (Kareva & Echevarria, 2013); this study will only investigate one: the implementation of professional learning about quality interactions. While this research study will not investigate any changes in English learners' access to classroom instruction or in student achievement, it is nonetheless a motivation that compels this research study.

Purpose of the Study

The purpose of this research is to study classroom implementation stemming from the quality interactions professional learning initiative in CPS. This research seeks to determine whether CPS secondary core content teachers who participated in the quality interactions professional learning are transferring the professional learning to their classroom instruction. Additionally, this research study intends to reveal reasons why CPS secondary core content teachers might experience success or challenges with implementing the quality interactions professional learning.

Research Questions

To support the purpose of the research study, I intend to investigate the following research questions:

- To what extent are CPS secondary core content teachers transferring professional learning about quality interactions to classroom instruction?
- What has facilitated or hindered CPS secondary core content teachers' transfer of professional learning about quality interactions to their classroom instruction?

Significance of the Study

While there has been research on the transfer of professional learning to instructional practice (e.g., Clement & Vandenberghe, 2001; Darling-Hammond et al., 2017; Hawley & Valli, 1999; Herrington et al., 2009; Klein & Riordan, 2009; Knight, 2021; Riordan et al., 2009; Wilde, 2010), few studies have investigated content teachers' implementation of professional learning about teaching English learners that is mandated by stakeholders external to the school system. There has been some research published concerning the implementation of professional learning for in-service content teachers about teaching English learners (e.g., Bacon, 2020; Chang-Bacon, 2020; Molle, 2021; Penner-Williams et al., 2017; Vera et al., 2021). Research related to the factors that support or impede content teachers' implementation of mandated professional learning about teaching English learners, however, remains an understudied topic. Similarly scarce is research related to content teachers' implementation of professional learning about quality interactions for English learners.

Investigating teachers' implementation of the quality interactions professional learning could lead to finding areas in the professional learning process that need improvement and to making adjustments so that the desired outcome is more easily achieved (Mertens & Wilson, 2019). Because the quality interactions professional learning is a new initiative, determining what implementation of this professional learning is like in CPS classrooms could have implications for the school district's approach to professional learning about quality interactions. Evaluating teachers' implementation of their

professional learning would allow for decisions to be made about aspects of the professional learning initiative that need improvement, if any, in order to lead to quality interactions taking place during classroom instruction. Exploring teachers' implementation of their professional learning is a necessary step before CPS can determine whether the professional learning needs to be adjusted or how the initiative might impact student learning. This research could lead to professional learning in CPS becoming more effective for teachers, which would support a meaningful professional learning experience for teachers that goes beyond compliance, as well as a potential impact on student learning.

Definition of Terms

This section provides clarification about the meaning of key terms that are relevant to this research study. Although these terms could have a variety of definitions, this section explains how I define them, as relevant to my research.

- English Learner: a student in grades K-12 with a language other than, or in addition to, English in the home and who is eligible for English language development services based on a qualifying score on an English language proficiency test (State Department of Education, 2021)
- Implementation: the application of ideas and concepts from professional learning to classroom instruction, either imperfectly or proficiently (Klein & Riordan, 2009; Knight, 2021)
- Professional Learning: job-related, collaborative learning that occurs through teachers' active participation (National Council of Teachers of English, 2019; Scherff, 2018) in training, workshops, professional learning communities, coaching, and/or peer observations with the purpose of changing assumptions and instructional practice to improve student learning (Chung Wei et al., 2009; Stewart, 2014)
- Quality Interactions: discussions about academic content between or among students that involve the "sustained joint construction of knowledge" (Walqui, 2010, p. 26)

- Sheltered Content Instruction: “method for teaching ELs [English learners] grade-level core content… in English by integrating English language and literacy development into content area instruction” (United States Department of Justice, 2019, p. 3)

Summary

This chapter presented a problem of practice, including the local problem in CPS and its connection to a larger problem. The chapter also explained the purpose of the proposed research, detailed the intended research questions, and justified the significance of the research. These details, along with the definitions of key terms, provide a context for understanding how this research study connects with the literature review in chapter two.

Chapter 2: Literature Review

Reviewing the literature about teachers' transfer of professional learning to instructional practice will provide a deeper level of understanding about the problem of practice in CPS. Because CPS has not established the extent to which transfer is taking place from the quality interactions workshop to teachers' classrooms, reviewing relevant literature provides insight into the potential approaches to pursue when investigating teachers' implementation. This literature review includes research about educators' transfer of professional learning about various topics to their instruction at all grade levels. The purpose for including research that extends beyond implementation of professional learning about quality interactions for secondary core content teachers is to explore if there are patterns across levels and disciplines. Although there is research about the implementation of professional learning outside of educational settings, such as in government, non-profit, or private sector settings, this literature review focuses on research about educators' implementation of professional learning. Narrowing the focus of the literature review to spotlight the professional learning experiences only of educators balances the wider inclusion of various professional learning topics and student ages.

Literature Review Structure

This literature review begins with an explanation of quality interactions and their effect on the education of English learners, including some pedagogical recommendations for improving quality interactions in classrooms. Next, the literature review addresses the concepts of professional learning and implementation. After that, the literature review presents research about factors that affect teachers' implementation of their professional learning, such as teachers' beliefs, the professional learning facilitator, the need for structural support and follow-up, the amount of time implementation takes, and various barriers that might prevent teachers from effectively implementing their professional learning.

Quality Interactions

What Are Quality Interactions?

Scholars use a variety of terminology to refer to students' use of academic language in classroom interactions. Some of the terminology includes a*cademic discourse* (Hansen-Thomas, 2009), *accountable talk* (Ardasheva et al., 2016; Michaels et al., 2008; Michaels et al., 2016), *dialogic discourse* (Caughlan et al., 2013), *dialogic interactions* (Haneda, 2017), and *quality interactions* (Walqui, 2010; WestEd, 2019). Despite the variety of terminology referenced in the literature, there are important commonalities among the explanations of what these terms mean. These terms encompass the open exchange of ideas, co-creation of new knowledge, mastery of content knowledge and expectations for reasoning, investigation of multiple perspectives, and respectful interactions (Haneda, 2017). Although these terms can be used interchangeably, this paper will default to the term *quality interactions* when referring to these types of structured academic conversations between students to maintain consistency with the term used in the CPS English Learner Program evaluation (WestEd, 2019).

The research indicates that not all interaction is equally effective (Zwiers et al., 2014). For example, there is a difference between talking *to* someone, such as turning to a classmate and stating an answer, versus talking *with* someone, which involves having a conversation in which two or more people participate and co-construct ideas to develop new knowledge (Zwiers et al, 2014). The type of interaction that involves students talking *with* others is part of what distinguishes quality interactions from a more general category of student interaction. Consequently, the references to quality interactions in the literature review, as well as the rest of this paper, refer to students talking *with* others.

Pedagogical Recommendations

Among pedagogical resources, patterns emerged regarding common recommendations for improving quality interactions in classrooms. One common recommendation is for teachers to craft

better questions. Frequently, teachers ask display questions, questions to which the teacher already knows the answer, as a means to assess students' knowledge, yet these using these types of questions too often during instruction results in a high percentage of teacher talk (Gibbons, 2015; Walsh, 2011). Instead of relying on display questions, the resources recommend that teachers develop open-ended questions and prompts that lead to sustained discussion and longer, more personal student responses (Staehr Fenner & Snyder, 2017; Walsh & Sattes, 2015; Zwiers, 2014). Adjusting the type of questions that teachers ask should have a significant effect on the quality of student interactions.

While answering these questions, students should participate in activities and structures that ensure that quality interactions will take place. The pedagogical resources often recommend three particular structures or activities to encourage quality interactions. One suggested activity for encouraging quality interactions is role play (Brown, 2015; Gibbons, 2015; Jones, 2007; Staehr Fenner & Snyder, 2017; Zwiers, 2014), a major benefit of which is that students feel less anxious about using new academic language because they are pretending to be someone else (Jones, 2007; Staehr Fenner & Snyder, 2017). Another way to structure quality interactions is opinion continuum, during which students stand along a continuum in the classroom to indicate their opinion about a controversial topic and support their opinion with evidence (Gibbons, 2015; Staehr Fenner & Snyder, 2017; Walsh & Sattes, 2015; Zwiers, 2014). A third structure that is common in the pedagogical resources is information gap, which requires students to have access to different information from each other while they communicate to solve a problem (Brown, 2015; Gibbons, 2015; Jones, 2007; Zwiers, 2014; Zwiers & Soto, 2017). It is not possible for students to complete the task without talking to each other, asking questions, and sharing the information they each know. Even though the pedagogical resources reference numerous other activities and structures for quality interaction, role play, opinion continuum, and information gap are the most typically recommended.

The pedagogical resources also frequently reference the need to give students feedback during and after these types of activities. Feedback can come from self-evaluation (Jones, 2007; Zwiers & Soto, 2017), peer evaluation (Brown, 2015; Jones, 2007; Zwiers & Soto, 2017), or teacher evaluation (Jones, 2007) through the use of data collection to target specific learning needs. Tools such as checklists and rubrics (Zwiers & Crawford, 2011) or transcript analysis (Zwiers & Soto, 2017) aid the process of data collection to give feedback on students' content and language learning needs (Walsh, 2011). Without including feedback and evaluation as part of quality interactions, it becomes more challenging for teachers to ensure that they are furthering their students' skills.

Importance of Proactively Planning for Quality Interactions

The literature suggests that teachers need to proactively pre-plan for quality interactions in order for them to be effective. Providing explicit instruction and clear expectations about the structures, routines, norms, and content of conversations is key to ensuring the high quality of the interactions (Ardasheva et al., 2016; Brown, 2015; Michaels et al., 2016; Walsh & Sattes, 2015). In fact, research indicates that quality interactions do not occur without the teacher's intentional effort (Michaels et al., 2016). In one study, teachers who used specific tools to plan for classroom dialogue were significantly more likely to have classrooms with higher percentages of student talk as compared to classrooms of teachers who did not use the planning tools (Caughlan et al., 2013). "Interaction does not simply happen" (Walsh, 2011, p. 53), so teachers need to plan for questions and prompts that require, rather than simply encourage, conversation (Zwiers, 2014; Zwiers & Soto, 2017). Teaching students to engage in quality interactions effectively requires a sustained commitment from the teacher to intentionally plan and reflect upon the discourse practices in the classroom (Shea, 2018).

Educators should plan to teach students the language of interaction, which consists of phrases and sentences needed for managing academic discourse and collaboration, to prepare them for participating in quality interactions (Brown, 2015; Jones, 2007; Zwiers, 2014). Depending on students'

cultural backgrounds and the impact of societal expectations, students may have differing readiness levels for participation in quality interactions (Michaels et al., 2008), and explicitly teaching these skills is especially helpful for students who are less familiar with the learning norms of the school (Gibbons, 2015). Some examples of categories of the language of interaction needed for quality interactions include the language for clarifying ideas (Walsh, 2011; Zwiers & Soto, 2017), expressing disagreement politely (Brown, 2015), elaborating, paraphrasing, and synthesizing information (Zwiers & Crawford, 2011). Without intentional planning for the teaching of such academic language, the quality of student-to-student interactions is likely to weaken.

Need for Professional Learning About Quality Interactions

It would be advantageous for all teachers to engage in professional learning regarding the role of language instruction in furthering English learners' equitable participation in content-specific discourse (Molle, 2020). When making instructional decisions, content teachers are likely to overlook the importance and influence of language development (Molle, 2020). There is indication that professional learning improves teachers' ability to facilitate quality interactions in classroom instruction (Wilkinson et al., 2017). Therefore, the availability of professional learning related to the role of language development in content courses could provide educators with a vital opportunity for professional growth.

Effect of Quality Interactions on Student Learning

Overall, the effect of quality interactions on student learning appears to be positive (Michaels et al., 2008; Wolf et al., 2005). It is likely that quality interactions can improve academic achievement due to the impact of quality interactions on students' linguistic development, cognitive development, acquisition of content knowledge, and engagement in the learning process (Haneda, 2017). Research indicates that quality interactions enable students to develop the academic language and content knowledge of a specific discipline while providing context for both the language and content learning

(Ardasheva et al., 2016; Thompson, 2008). For example, Hansen-Thomas (2009) found that quality interactions during classroom instruction showed improvements in middle school students' math content knowledge and ability to engage in academic discussions about mathematical concepts. One particular benefit of using quality interactions in classroom instruction appears to be that teachers gain greater access to the knowledge and thinking processes of their students (Michaels et al., 2008), which enables teachers to target their instruction to students' needs. Although the empirical research generally does not distinguish between the benefit of quality interactions that occur between students and teachers versus students and their classmates, the majority of empirical research in this review appears to concern quality interactions between students and teachers.

When considering multilingual students' participation in quality interactions, it is important to note that these interactions are not restricted to occurring in English. Research suggests that translanguaging, the practice of using any and all languages someone knows to communicate, may be beneficial for English learners' education (Garcia & Kleyn, 2016). Furthermore, translanguaging may increase the equity of content instruction for multilingual students (Tai, 2021); it is unclear, however, whether including translanguaging in classroom conversations has an influence on whether students are engaging in quality interactions.

Affective Effects of Quality Interactions

Including small group structures in classroom instruction could positively influence students' comfort with engaging in quality interactions. Many students, particularly English learners, might feel less anxious about speaking during class if they are working within a pair or small group structure rather than speaking in front of the entire class (Brown, 2015; Davis, 1997, Gibbons, 2015; Jones, 2007; McDonough, 2004). Within small group settings, students are less likely to worry about classmates listening as they experiment with new language (Brown, 2015). For students to truly feel secure with speaking during quality interactions, the teacher must ensure to establish a supportive classroom

environment for discourse (Gibbons, 2015) that respects all ideas, even those that contradict the opinion of the majority (Zwiers & Soto, 2017). By intentionally preparing students for quality interactions within small groups of students through careful planning and the use of scaffolds, students can become comfortable with student-to-student quality interactions (Jones, 2007).

Transfer of Professional Learning to Practice

When teachers participate in professional learning about a topic, such as about facilitating quality interactions for English learners, it is important that the teachers apply their learning to their classroom instruction. After all, if the purpose of professional learning is for teachers to improve their ability to do their jobs, the application of professional learning to classroom instruction can bring change to students' learning experiences. This next section will focus on literature related to teachers transferring their professional learning to their instructional practice.

What is Professional Learning?

The terms *professional learning* and *professional development* are often used synonymously, even within the same document (Darling-Hammond et al., 2017), yet there are fundamental differences between the two. *Professional learning* is job-related, collaborative learning that occurs through teachers' active participation (National Council of Teachers of English, 2019; Scherff, 2018) in training, workshops, professional learning communities, coaching, and/or peer observations with the purpose of changing assumptions and instructional practice to improve student learning (Chung Wei et al., 2009; Stewart, 2014). In contrast, however, the term *professional development* tends to refer to stand-alone workshops that are delivered to teachers without their active involvement in and ownership of the learning process (National Council of Teachers of English, 2019; Scherff, 2018). A key aspect of *professional learning*, as opposed to *professional development*, is the idea of teacher agency (Scherff, 2018)− that teachers have control and influence over their own workplace learning. In this paper, I refer to teachers' job-related learning as *professional learning*, both to remain consistent with the

terminology used by CPS, and also to emphasize the critical role of teachers' active participation and involvement in their own learning.

Continuum of Implementation

The term *implementation* refers to the application of ideas and concepts from professional learning to classroom instruction, either incompletely or proficiently (Klein & Riordan, 2009; Knight, 2021). Teachers' transfer of professional learning to classroom instruction can look different depending on where they are in the implementation process. Based on their empirical research about teachers' implementation of a particular professional learning program, Klein and Riordan (2009) identified stages in a continuum of implementation. According to this research, teachers display a range of success in implementation, even with support from coaches. Implementation is not binary (implementation or non-implementation); rather, teachers' efficacy of implementation shifted along a continuum (from no implementation to masterful implementation) in a non-linear manner (Klein & Riordan, 2009). According to Klein and Riordan (2009), there are six stages along the continuum of implementation (see Table A1), which range from no implementation whatsoever to successful implementation that includes novel adaptations to meet students' needs. Knight (2021) also promotes the idea of a five-stage continuum of implementation, which also ranges from no implementation to effective implementation that includes adaptations to meet students' needs (see Table A2). Although this research references stages, the authors clarify that teachers do not progress along the stages in any particular order; rather, teachers might move up and down the continuum depending on a variety of factors (Klein & Riordan, 2009; Knight, 2021). These scholars have similar ideas that serve as a reminder not to expect highly skilled implementation from all teachers right away.

Teachers' Beliefs

The literature points to the influence of teachers' beliefs on whether they transfer professional learning to their classroom situations. Although teachers are not all the same (see Dykes & Delport,

2018; Olayvar, 2022; Portela Pruaño et al., 2022) and might have a variety of reasons for whether they implement their professional learning in classroom instruction, the literature identifies some common ways in which teachers' beliefs can interact with their professional learning implementation. Teachers' motivation for attending the professional learning, their understanding of why they are attending professional learning, and whether they are required to attend the professional learning are three factors that can affect implementation. Additionally, teachers' beliefs related to the topic of the professional learning and any potential shifts in their perspective during the learning process are other factors that might affect the transfer of professional learning to pedagogical practice.

Teachers' Motivation. Teachers' motivation to attend professional learning and to implement it in their classrooms plays an important role in the success of any professional learning program. Adults tend to be motivated more internally than externally to learn (Knowles & Associates, 1984, as cited in Rohlwing & Spelman, 2014). When professional learning aligns with teachers' expectations in terms of quality, content, or format, their attitude about the professional learning is likely more positive, which can have significant effects on their motivation to learn (Moon, 2001). Typically, teachers learn when they want to or when there is a need to (Biech, 2017), and the transfer of training to instructional practice is unlikely to be effective if teachers do not want to be implementing their professional learning (Bucznyski & Hansen, 2010, as cited in Darling-Hammond et al., 2017). Teachers are likely, however, to try new ideas in their classrooms if they believe the ideas will be beneficial for students (Guskey, 2001; Guskey, 2021; Knight, 2021; Loucks-Horsley et al., 2010, as cited in Wilde, 2010). For many teachers, implementation itself cannot be the end goal; instead, having a goal of supporting students is more likely to keep teachers motivated about implementing what they have learned (Guskey, 2001; Guskey, 2021; Knight, 2021). Promptly reviewing student data to identify improvements in student learning can motivate teachers to continue with their implementation (Guskey, 2002; Guskey, 2021).

Teachers' motivation to learn is a factor that can affect the success of professional learning. In one study about professional learning related to technology integration in classrooms instruction, researchers collected data about teachers' motivation (Herrington et al., 2009). This professional learning was a two-hour self-paced online module, after which participants designed a lesson plan integrating the technology from the module, taught the lesson to students, and adjusted the lesson plan as needed. Herrington and associates found that teachers who had strong motivation for wanting to participate in the training had a more positive attitude about it and were more likely to integrate the technology from the module into their classroom instruction. Although this study involved self-paced professional learning about technology rather than live professional learning about quality interactions, it is worth considering that this study's findings about the impact of teacher motivation on implementation professional learning might be relevant to other contexts as well.

Another empirical study (Yang et al., 2020) also found a connection between teachers' motivation and their implementation of professional learning. In this study, graduate students and scholars, many of whom were visiting from outside the United States to learn about the American education system, voluntarily participated in a university's 12-week professional learning program. According to Yang and associates (2020), the participants were excited to be chosen for the training program, which they enjoyed and found valuable. These participants reportedly had a much higher rate of transfer from training to instructional practice compared to other empirical studies (Yang et al., 2020). Due to the focus in this study on voluntary professional learning for visiting scholars from abroad, it is unclear if this study can be generalizable to professional learning for public school teachers in the United States. It is helpful, however, to recognize another study linking teachers' motivation with their implementation of professional learning.

Understanding The Why. For teachers, understanding the why behind their professional learning can improve their motivation. Adults want to know why something is worth knowing (Knowles

& Associates, 1984, as cited in Rohlwing & Spelman, 2014). This includes teachers' desire to know the rationale behind professional learning they attend (Kennedy, 2016, as cited in Parkhouse et al., 2019). Understanding why the professional learning is needed or useful connects with teachers' inclination to learn when there is a clear need related to a benefit for students (Biech, 2017; Knight, 2021; Loucks-Horsley et al., 2010, as cited in Wilde, 2010). Although it might not be standard practice yet to communicate to teachers the thought process behind providing them with certain professional learning, Collinson (1996, as cited in Hawley & Valli, 1999) suggests that new trends in effective professional learning include an emphasis on the reasoning behind pedagogical recommendations. Based on literature about the purpose of professional learning, it seems that clear communication of the reason the professional learning is being offered might increase teachers' motivation to participate.

The Influence of Compliance. Whether teachers participate in professional learning voluntarily or out of compliance with a directive could affect the likelihood of transfer to classroom instruction (Chang-Bacon, 2020; Kennedy, 2016, as cited in Parkhouse et al., 2019; Kennedy, 2019). Professional learning is often mandated from the central office of a school district or a state department of education, yet requiring teachers to participate in professional learning only for the purpose of compliance does not align with best practices for effective professional development for teachers (Wilde, 2010). Professional learning is likely to be more effective when teachers participate voluntarily because of the importance of the participants' motivation in the learning process (Kennedy, 2016, as cited in Parkhouse et al., 2019). Sometimes teachers comply with professional learning implementation only out of courtesy or to convince coaches to leave them alone (Kennedy, 2019). Kennedy suggests that in these types of cases, there might be implementation initially, but it would not be long-lasting; the implementation would reflect temporary compliance rather than meaningful learning.

In research from Massachusetts, the United States Department of Justice required public school teachers to complete professional learning about teaching content to English learners (Chang-Bacon,

2020). According to the study's findings, the focus on compliance rather than on learning and on improving student outcomes led to teachers' feelings that they were attending the professional learning sessions only to satisfy requirements, not because they found the experience meaningful. Some facilitators of the professional learning adapted the content to be more relevant for teachers, recognizing that teachers did not want to attend and hoping that the adaptations would increase teachers' motivation to participate (Chang-Bacon, 2020). The influence of compliance on transfer of professional learning in this research is particularly relevant due to the parallels with similar professional learning for CPS teachers being mandated by the Department of Justice.

In contrast, however, other research implies that compliance is actually a positive factor that encourages teachers to implement their professional learning. In a study about university professors engaging in professional learning, Jaramillo-Baquerizo and colleagues (2019) found that requiring university professors to complete professional learning in order to obtain tenure had a positive effect on the professors' implementation of their professional learning. In fact, the study found that this requirement was one of the most significant factors affecting the professors' implementation of their learning (Jaramillo-Baquerizo et al., 2019). It appears that the authors of this study considered *implementation* to mean professors sharing ideas from the professional learning with their colleagues, not applying their learning to instruction with students. This usage of the term *implementation* does not align with the other research and therefore should not be weighted heavily when considering how compliance affects the transfer of professional learning to instructional practice. Additionally, this study appears to be an outlier in the positive influence of compliance upon implementation of professional learning, as the dominant theme among the literature presents opposite findings. Furthermore, the instructional role of a university professor is not equivalent to the role of a K-12 teacher, so it is unclear how transferable these findings are to a public K-12 school setting.

The Influence of Teachers' Beliefs. When teachers believe that the professional learning is valuable and relevant, they are more likely to implement the new learning during classroom instruction. In the study about graduate students and visiting scholars participating in voluntary professional learning at a university, there was a high degree of transfer from the training to the teachers' instruction (Yang et al., 2020). According to the researchers, the teachers' positive attitudes about the value of the professional learning, whether pre-existing or developed during the learning process, supported their classroom implementation.

The literature also points to connections between implementation of professional learning and teachers' beliefs regarding the content they teach. There is indication in the literature that teachers' beliefs about their content area having unique learning demands can impact their implementation. For example, in one study, math teachers believed that the nature of teaching math did not align well with their school's professional learning (Klein & Riordan, 2009). Each of the teachers interviewed in this study mentioned how their particular content area impacts their ability to adapt and implement the training. Furthermore, many of these teachers thought their implementation would be more effective if their coach shared the same subject-matter expertise as they did because they felt that a coach with teaching experience from a different content area might not understand the content-specific demands. Additionally, the teachers felt that discussing the training and its implementation with groups of content-alike teachers was important for their success (Klein & Riordan, 2009).

Similarly, in a mixed-methods study of beginning teachers' learning about best practices for teaching content to English learners, some participants viewed their professional learning as irrelevant to their jobs (Bacon, 2020). The teachers had difficulty with translating general ideas to their specific content area and could not easily comprehend how to apply the ideas to their own classrooms without explicit examples from their content areas. This led to teachers choosing not to implement their professional learning due to the belief that it was not relevant to their content area. Based on these

studies, the influence of a teacher's content area on implementation of professional learning should not be overlooked.

In addition to teachers' beliefs about the content they teach being relevant to professional learning, teachers' beliefs about their role in a school can also influence the transfer of learning to classroom instruction. In a case study of middle school teachers who received professional learning about teaching English learners, the teachers did not integrate language development in their lesson plans (Molle, 2021). Molle (2021) believed the teachers did not apply what they had learned to their instructional practice due to their beliefs. The teachers reportedly identified as teachers of content, not language (Larsen-Freeman & Tedick, 2016, as cited in Molle, 2021), and did not believe that content instruction and language instruction were of equal importance or that they could be integrated together (Molle, 2021). Because of their belief that language instruction was beneficial but secondary to, and separate from, content learning and was therefore optional in content classrooms (Molle, 2021), the teachers did not transfer their professional learning to classroom instruction. Additionally, Bacon (2020) found that although beginning teachers were likely to agree that all teachers had the responsibility to teach language skills, they did not take on the corresponding roles and responsibilities of a language teacher. Bacon suggested a possible explanation for this discrepancy might be that the teachers said what they thought was socially acceptable, even if they did not truly believe their own words. Studies like these might lead to the inference that if teachers' beliefs change, they will be more likely to implement their professional learning.

Shifts in Teachers' Perspectives. An important aspect of adult learning is for it to be transformative − to adjust participants' perspectives (Baumgartner, 2019). In a study regarding professional learning about teaching content to English learners, which was mandated by the Department of Justice, the professional learning facilitators thought that an important part of the learning was to cause a shift in teachers' perspectives (Chang-Bacon, 2020). Although the facilitators

thought that teaching about specific pedagogical strategies was important, they believed it was even more critical to use the professional learning to raise awareness about the needs of English learners. In particular, the facilitators though the greatest value of the professional learning was in shifting the perspectives of teachers to thinking that teaching English learners was their responsibility, not only the responsibility of English as a second language (ESL) specialists. When content teachers shifted their perspective on teaching English learners, it changed their beliefs about the purpose of the professional learning from just checking a box to being a valuable learning experience (Chang-Bacon, 2020). While the official purpose of the professional learning in this study might have been to provide training about how to teach content to English learners, it also served as a way to shift the teachers' perspectives about their role in the school.

Another example of indirectly shifting teachers' perspectives relates to professional learning about equity. In one study (Riordan et al., 2019), teachers were not comfortable with having explicit discussions related to equity. With this in mind, facilitators designed the professional learning to bring a focus on equity that could cause more indirect shifts in teachers' perspectives without causing the teachers to resist learning about equity. Based on these examples of approaches to changing teachers' perspectives, it might be necessary to focus on the belief shift before working on the official goals of professional learning.

While these studies point to the importance of a shift in perspective of the teachers who are participating in professional learning, there is also value in the designers and facilitators of professional learning adjusting their perspective about what professional learning should be like. Instead of a traditional view of professional learning as being stand-alone events that are not necessarily related to teachers' day-to-day work, professional learning could be designed to solve real-life problems with student performance (Hawley & Valli, 1999). This would require a shift in the format of professional

learning, beliefs about professional learning in the field of education, and structural support for professional learning at schools (Hawley & Valli, 1999).

The Facilitator

The literature points to the impact of the facilitator's characteristics in affecting transfer of professional learning to instructional practice. The qualifications of the facilitator can affect the participants' experiences during the professional learning (Kennedy, 2016, as cited in Parkhouse et al., 2019; Moon, 2001). A facilitator with a high degree of credibility can instill confidence among teachers that the professional learning will be effective (Moon, 2001). Moreover, professional learning programs are more likely to be effective when the facilitators have significant experience working with teachers and are able to design the professional learning based on their own extensive experience (Kennedy, 2016, as cited in Parkhouse et al., 2019). Whether the efficacy of the professional learning is due to high quality facilitators or due to teachers' perceptions about the qualifications of the facilitators, the facilitators' qualifications seem to be a key factor.

Another theme from the literature related to facilitators is the importance of the relationship between the facilitator and the participants. The relationship between the facilitator and the participants matters in promoting the transfer of professional learning to instructional practice, both in terms of teachers' motivation (Kennedy, 2016, as cited in Parkhouse et al., 2019; Knight, 2021) and in the influence over changing teachers' perspectives (Cox, 2015; Taylor, 2009, as cited in Baumgartner, 2019). Kennedy (2016, as cited in Parkhouse et al., 2019) found that teachers' motivation when participating in professional learning increases when they are treated as equal to, rather than below, the facilitator. Using relationships to create a safe, welcoming space for coaching helps teachers feel supported, rather than judged, and can promote the transfer of professional learning to instructional practice (Knight, 2021). Facilitators can take advantage of the relationships they have built to influence shifts in participants' thinking. According to Taylor (2009, as cited in Baumgartner, 2019), dialogue that

builds off trusted relationships supports transformative learning. Cox (2015) also supports the idea that relationships can affect changes in beliefs, asserting that the relationship between the facilitator and the participant is more likely than course content to cause a shift in participants' thinking. Thus, the same professional learning might have different effects on teachers depending on who happens to be facilitating the learning.

Supportive Follow-Up

There seems to be consensus in the literature that for teachers to be able to implement their professional learning during classroom instruction, it is beneficial to have follow-up, such as instructional coaching or collaborative planning, after the end of professional learning workshops (Darling-Hammond et al., 2017; Guskey, 2021; Hawley & Valli, 1999; Ingvarson et al., 2005, as cited in Parsons et al., 2019; Knight, 2021; Moon, 2001; Penner-Williams et al., 2017; Renyi, 1996; Speck & Knipe, 2001, as cited in Teemant, 2010; Wilde, 2010). This follow-up should include a combination of support and pressure; the support reduces teachers' anxiety about trying new ideas, and the pressure encourages teachers to continue their implementation even when it is challenging (Guskey, 2001; Guskey, 2021). The supportive pressure aids the transition of implementation into habit, which makes it more likely that there will be a lasting impact on teachers' instructional practice (Guskey, 2001; Guskey, 2021).

In one study, teachers thought that the follow-up after the completion of their training was one of the most helpful aspects of the professional learning program (Ingvarson et al., 2005, as cited in Parsons et al., 2019). Wilde (2010) proposes that infrequent opportunities for follow-up, practice, and feedback is one reason professional learning often misaligns with teachers' needs. The research indicates that teachers benefit from multiple days of sustained follow-up to develop new skills and apply them to classroom instruction (Hawley & Valli, 1999; Renyi, 1996). During this follow-up, teachers need opportunities to practice what they have learned and to observe demonstrations of what the

implementation should be like in order to support the transfer of professional learning to instructional practice (Hawley & Valli, 1999; Wilde, 2010).

One type of follow-up that appears in the literature is the recommendation for school-based coaching (Darling-Hammond et al., 2017; Klein & Riordan, 2009; Knight, 2021; Penner-Williams et al., 2017; Moon, 2001; Speck & Knipe, 2001, as cited in Teemant, 2010; Tooley & Connally, 2016, as cited in Darlin-Hammond et al., 2017). Coaching in classrooms is thought to be effective for helping teachers develop new skills and maintain changes in instructional practice over time (Speck & Knipe, 2001, as cited in Teemant, 2010). Darling-Hammond and associates (2017) found that coaching support from experts, including modeling effective practices, encourages transfer from professional learning to instructional practice more effectively than when teachers attend workshops but do not have follow-up coaching. Knight (2021) concurs that coaching and demonstrations of what the teachers should be doing are helpful for the transfer from professional learning to practice. Additionally, Moon (2001) recommends coaching sessions during which participants discuss how they can implement the learning in their classrooms. Sustaining professional learning over time is likely to provide more opportunities for coaching and the continuation of learning informally outside of official professional learning meeting times (Darling-Hammond et al., 2017).

When considering who should be coaching the teachers, there is no consistency in the literature. One perspective is that it is not ideal to select random coaches and tell them to support teachers; they must have appropriate expertise and authority (Tooley & Connally, 2016, as cited in Darlin-Hammond et al., 2017). A differing perspective is to make use of peers whose implementation is more advanced to support their colleagues (Moon, 2001). The disagreement furthers when considering the coach's teaching background. According to one study, teachers often want their coaches to share their same subject-matter expertise (Klein & Riordan, 2009). Yet in other research, teachers appreciated the opportunity to have conversations with those who have taught a different grade level or content

area (Penner-Williams et al., 2017). These teachers found that diversity in teaching background made the conversations more interesting and did not detract from the sharing of ideas and suggestions. Although there is no consensus about the ideal background for a coach, there is consistency in the support for coaching in general to support the transfer of learning to instructional practice.

Structural Support

A notable theme in the literature is the need for structural support for the implementation of professional learning. According to the literature, the expectation that teachers should apply professional learning to their classroom instruction should align with the realities of their teaching contexts (Klein & Riordan, 2009; Wilde, 2010). Often, teachers do not see their professional learning as aligned with other expectations placed upon them, such as grading policies or preparing students to take standardized tests (Klein & Riordan, 2009). When a school values and prioritizes teachers' professional learning, however, it is more likely that the professional learning will influence classroom instruction (Riordan et al., 2019). If a school provides teachers with "learning space," which involves measures of intentional support in the work environment to aid transfer from professional learning to instructional practice, teachers' implementation of professional learning is more likely to succeed (Clement & Vandenberghe, 2001, p. 55). Some examples of this organizational commitment to learning space could include appropriate funding, sustained follow-through from the district office, structuring teachers' schedules so they have time to plan and implement new ideas, and encouraging risk-taking as part of the teacher evaluation process (Clement & Vandenberghe, 2001; Herrington et al., 2009).

In a research study about professional learning related to teaching English learners, researchers collected surveys from eight school districts in the Midwest part of the United States at the end of professional learning sessions (Vera et al., 2021). Teachers indicated on the surveys that they were interested in having the educational organization establish a collaborative process for improving teachers' ability to meet the educational needs of English learners, rather than individual teachers

learning more about the topic on their own. The teachers wanted ongoing support coordinated by their school's leadership. The teachers also indicated that the school district should commit to having professional learning communities address the needs of English learners in an ongoing manner. Based on this research study, teachers felt that structural support for implementation of their professional learning would be beneficial. Other researchers concur that there must be an organizational commitment to provide teachers opportunities to process and implement their learning (Hawley & Valli, 1999; Herrington et al., 2009). Whether this structural support is school-based or stemming from a larger, district-wide effort, research suggests that implementation is more likely to succeed with supportive structures in place.

Administrator Involvement. When considering the structural support that could be in place to aid teachers' implementation of their professional learning, research provides some recommendations about the involvement of administrators. Typically, professional learning is deemed to be most effective when it is school-based with active support and involvement from the leadership of the school (Clement & Vandenberghe, 2001; Hargreaves, 2000; Herrington et al., 2009). The success of teachers' professional learning goes beyond their individual commitment; teachers' perception of the school administrators' leadership also contributes toward the efficacy of professional learning (Clement & Vandenberghe, 2001). Specific suggestions for administrator involvement in structural support of professional learning implementation include identifying a common learning focus for teams (Molle, 2021), scheduling meetings to discuss teachers' implementation (Moon, 2001), coordinating partners or small groups to support each other with implementation (Herrington et al., 2009; Moon, 2001; Penner-Williams et al., 2017), identifying mentors at the school to support implementation (Herrington et al., 2009; Moon, 2011), showing enthusiasm for the topic of the learning (Herrington et al., 2009), and providing release time for teachers to prepare and reflect upon lessons that implemented their professional learning (Herrington et al., 2009). The culture of the school matters to the success of transferring professional

learning (Herrington et al., 2009), and administrators have considerable influence over establishing the school culture.

Professional Learning Communities. One particular mixed-methods study investigated teachers' perceptions of support from professional learning communities (PLCs) when transferring professional learning about teaching English learners to classroom instruction (Penner-Williams et al., 2017). Survey results indicated that 97% of the participants thought the support and collaboration of their PLC contributed to their effectiveness as a teacher to a moderate or greater extent (Penner-Williams et al., 2017). The teachers felt that PLCs helped them to transfer their training to classroom implementation and that the conversations they had with colleagues led to a feeling of support and to their willingness to try a variety of strategies. In particular, conversations in which teachers identified challenges and questions with implementation and effects of implementation on students were seen as helpful to the transfer of their learning (Penner-Williams et al., 2017). Penner-Williams and associates also found that teachers valued arriving at PLC meetings prepared to discuss their implementation, which led to richer discussions. Another key idea that came from this research study was that the PLC structure established a bonding environment of encouragement and friendship that made the implementation more manageable and meaningful. Although the structure and characteristics of PLCs are not uniform across public school environments, the data Penner-Williams and associates collected warrant consideration of a PLC structure as one way to support teachers' transfer from professional learning to instructional practice.

School-Based Collaboration. Although only one of the articles in this literature review focused solely on PLCs, numerous sources highlighted the benefits of school-based collaboration (Clement & Vandenberghe, 2001; Drago-Severson, 2008; Herrington et al., 2009; Klein & Riordan, 2009; Molle, 2021; Moon, 2001; Penner-Williams et al., 2017). Collegiality and collaboration are important to professional learning, including teachers' perception that their colleagues are open to discussing and supporting their

learning and implementation (Clement & Vandenberghe, 2001). When teachers are able to bond with each other during implementation of professional learning, their learning deepens and becomes more meaningful (Penner-Williams et al., 2017).

Research provides support for the benefit of school-based collaboration for teachers' implementation of their professional learning. In a research study about teachers' integration of instructional technology in their classrooms after participating in professional learning, the researchers identified that support from a colleague was helpful in supporting implementation (Herrington et al., 2009). In addition to helping the teachers, school-based collaboration can also benefit students when teachers work together to implement their professional learning. In a case study about middle school teachers implementing professional learning about teaching English learners, Molle (2021) found that when teachers from different content areas worked together to apply their professional learning, they were able to identify skills that students needed to use across disciplines. This identification of cross-disciplinary skills supported the establishment of a coherent plan for reinforcing language development practices throughout a student's instructional day (Molle, 2021).

Drago-Severson (2008) conducted research with 25 principals about how to develop high-quality learning opportunities for teachers. During this research, principals identified specific practices that led to transformative learning. In particular, they identified teachers working as part of a team as an important support so that teachers did not need to work in isolation and therefore had some support with implementation. The principals also recognized collegial inquiry (opportunities to have reflective conversations with others) as a valuable support because it leads to more complex understanding of the learning being implemented. The abundance of support for school-based collaboration from a variety of scholarly publications indicates that this type of collaboration is likely to promote the transfer of professional learning to classroom instruction.

It Takes Time

A theme that emerges from the literature is that the implementation of professional learning takes time. The process of shifting perspectives takes time (Baumgartner, 2019). Change is slow, and teachers need time to alter their habits (Kennedy, 2019; Knight, 2021). Teachers also need time in their schedule for implementation of their professional learning (Darling-Hammond et al., 2017; Herrington et al., 2009; Klein & Riordan, 2009; Tooley & Connally, 2016, as cited in Darling-Hammond et al., 2017). Without time for planning and implementing new instructional approaches, transfer from professional learning to classrooms is unlikely to be as successful (Darling-Hammond et al., 2017). Extending the learning over time provides teachers with opportunities to learn informally outside of structured professional learning and to apply their learning to their classrooms (Darling-Hammond et al., 2017). Ideally, professional learning would be structured to give teachers time in the day, over a prolonged period, to try new ideas during classroom instruction (Klein & Riordan, 2009). Schools can also provide structural support for teachers' implementation in the form of release time so that teachers have time to put forth the effort and concentration needed for their own learning and have adequate time to prepare lessons and reflect upon their implementation (Herrington et al., 2009). Based on the literature, time is a particularly useful factor in encouraging teachers to transfer professional learning to their classrooms.

In addition to giving teachers time to apply their professional learning, it is important to recognize that it may take time to see progress that results from teachers' implementation. Many educators gradually improve their practices over time (Horn, 2010, as cited in Carpenter & Linton, 2018), so the ultimate impact of professional learning may not be apparent by the end of a particular professional learning event (Kennedy, 2016, as cited in Carpenter & Linton, 2018). Lasting impacts of implementation occur slowly (Collinson, 1996, as cited in Hawley & Valli, 1999). One cannot expect to see the effect of teachers' changes on student achievement concurrent with the professional learning

because it takes time for teachers to implement new ideas and to see resulting progress (Kennedy, 2019). This time lag makes it more challenging to recognize whether a professional learning program is likely to be successful.

Barriers

Research about transfer from professional learning to classroom practice identifies a variety of barriers that might prevent effective implementation. Darling-Hammond and colleagues (2017) identify a long list of potential barriers to successful transfer, including the following: insufficient resources; differing ideas about what high-quality instruction looks like; little time for planning and implementation; contradictory requirements that prevent effective implementation, such as mandatory use of a scripted curriculum; and the teachers' minimal foundational knowledge. Scarcity of time as a potential barrier to implementation is also referenced in other relevant research (Herrington et al., 2009; Klein & Riordan, 2009).

Another possible barrier to implementation is resistance from teachers. Knight (2021) believes that when teachers resist implementing their professional learning, the problem more likely stems from a systemic issue or those requesting that teachers change, rather than from the teachers themselves. He also recommends asking teachers why they are not implementing the professional learning and working to address the reason behind the resistance instead of blaming teachers (Knight, 2021). It could be possible to overcome this barrier by addressing teachers' concerns and by considering their voices and perspectives.

Yet another barrier to effective implementation of professional learning could be teachers' inflexibility. Teachers sometimes understand and support new ideas but avoid implementing them, sometimes unintentionally, to maintain existing habits (Kennedy, 2016, as cited in Molle, 2021). In her case study research, Molle (2021) found that even though teachers were aware that they could use the same strategies across content areas and with a variety of tasks within a discipline, they did not do so.

Only one of the three teachers in the case study implemented the professional learning across disciplines, and only towards the end of the 18-hour professional learning series (Molle, 2021). Like Molle, Bacon (2020) and Herrington and colleagues (2009) also noticed that many teachers had trouble extending new ideas to other content areas not included in the professional learning, although some teachers were able to do so. This lack of flexibility in teachers' thinking certainly could impact their ability to transfer professional learning to their classrooms because it is unlikely for professional learning to align perfectly with each participant's unique teaching situation.

Summary of Literature & Application to Problem of Practice

Overall, the literature suggests that quality interactions have a positive effect on English learners' content acquisition and language development (Ardasheva et al., 2016; Haneda, 2017; Hansen-Thomas, 2009; Michaels et al., 2008; Thompson, 2008; Wolf et al., 2005). There may be a tendency to assume that problems identified in classroom instruction are due to a lack of professional learning even if that connection has not been established directly (Chang-Bacon, 2020), yet there is indication that professional learning improves teachers' ability to facilitate quality interactions in classroom instruction (Wilkinson et al., 2017). For teachers to implement their professional learning about quality interactions, content teachers need to have the belief that facilitating quality interactions is both important and within their job responsibility. Factors outside of teachers' direct control, such as organizational structures for supportive follow-up, are also beneficial for classroom implementation of the quality interactions professional learning to occur. With this literature in mind, exploring CPS secondary content teachers' perspectives and practices related to implementation of the quality interactions professional learning could provide valuable insight about the level of implementation that is currently occurring in their classrooms and the factors that are supporting or hindering their implementation.

Chapter 3: Methods

This chapter introduces the methods used for the research. Each of the methods supported investigation of the following questions:

- To what extent are CPS secondary core content teachers transferring professional learning about quality interactions to classroom instruction?
- What has facilitated or hindered CPS secondary core content teachers' transfer of professional learning about quality interactions to their classroom instruction?

First, this chapter will provide details about the research questions, the overall study design, the study context, and the participants. Next, the chapter will describe the data used in the study, to include the data sources, data collection, and data analysis. After that, there will be commentary on the ethical considerations, assumptions, delimitations, and limitations of the research. The chapter will conclude with a timeline indicating when each step of the research process took place.

Study Design

The design for this research study was exploratory sequential mixed methods, beginning with surveys and then classroom observations with both qualitative and quantitative components, followed by qualitative interviews. This sequential design allowed input from stakeholders, specifically the secondary core content teachers, to have an influence on some of the data collection. For example, while responding to the survey, teachers identified indicators of implementation of the quality interactions professional learning. Their responses in this section of the research influenced the observation protocol used during a later stage of data collection. This sequential mixed-methods design provided insight into the teachers' perceptions and beliefs and allowed for the inclusion of their perspectives in the research design. Providing opportunities to adjust the research process depending on teachers' perspectives avoided an overreliance on my own preconceptions about teachers' implementation of the quality interactions professional learning. I recognized that I might have had a

different idea of what implementation of the quality interactions professional learning looked like than the teachers did; planning my research design with various perspectives in mind encouraged teachers' voices to be heard, even if their perspectives did not align with my preconceptions. Gaining this insight about teachers' ideas of what successful classroom implementation is like supported the study's investigation of teachers' transfer of professional learning to instructional practice because it was helpful to know, from a variety of perspectives, whether teachers were implementing their professional learning.

Including various sources of data was key to this research study. The qualitative component of the research allowed me to collect data about teachers' thoughts and perceptions about their implementation of the quality interactions professional learning; a goal of understanding the teachers' perspectives was an appropriate match for qualitative research (Hancock & Algozzine, 2016). Meanwhile, the classroom observations provided data about whether teachers' perceptions of their implementation matched what was taking place in their classrooms. Combining qualitative and quantitative data allowed me to address both research questions while checking the fidelity of the data.

Problem of Practice Study Context

Since the spring of 2021, CPS has been offering secondary core content teachers professional learning about quality student-to-student interactions with the goal of improving instruction in content classes for students identified as English learners. CPS chose to focus on providing professional learning to secondary core content teachers in particular due to the influence of a settlement agreement with the U.S. Department of Justice. The settlement agreement mandated that CPS provide sheltered content instruction training (training on how to simultaneously teach academic content and English language development) for secondary core content teachers who did not have an English as a second language (ESL) endorsement on their teaching license (United States Department of Justice, 2019). Although the quality interactions professional learning itself was not mandatory to attend, secondary core content

teachers in CPS were required to have completed a total of 30 hours of sheltered content instruction training by the end of the 2021-2022 school year. Teachers could choose from among a variety of sheltered content instruction training offerings, as long as they completed a total of 30 hours of training. The U.S. Department of Justice extended the settlement agreement for the 2022-2023 school year, during which teachers who had not previously completed their sheltered content instruction training were required to do so. Quality interactions was one of the topics available for teachers' sheltered content instruction training during the period of the settlement agreement, and CPS continues to offer it as a topic for professional learning. The CPS English Language Development Office developed a system to track teachers' completion of their sheltered content instruction training hours, and teachers received periodic reminders about training offerings if they had not completed their required hours.

The goal of the quality interactions professional learning being offered is to improve teachers' ability to encourage deep, rigorous conversations among students about academic content. Additionally, a key component of the professional learning initiative is to develop students' English language skills throughout their academic day, rather than just during their English class. The CPS English Learner Program evaluation suggests that quality interactions among students will improve English learners' access to and understanding of the academic content while supporting their English language development (WestEd, 2019). Because of these intended benefits for English learners, CPS hopes that providing teachers with professional learning about quality interactions might address the existing performance gap between English learners and their peers who are not identified as English learners (State Department of Education, n.d.).

CPS has offered a two-hour workshop about quality interactions as well as a six-hour series that took place in three two-hour sessions over three months. Both the quality interactions workshop and the series, which I developed and facilitated, took place in a live, virtual manner using Microsoft Teams. The content of the quality interactions professional learning included using open-ended questions and

prompts, teaching students to use the language of interaction[5], providing students with feedback about their interaction, and using opinion continuum, information gap, and role play structures. Additionally, some teachers have engaged in peer observations or school-based coaching related to the content of the quality interactions workshop and series. Since debuting the quality interactions professional learning, CPS has not collected data about whether quality interactions are more frequent in classrooms of teachers who have attended the workshops, and the degree of implementation among the teaching staff who participated in the quality interactions professional learning is unclear.

Participants

The participants in this study were selected from a population of CPS teachers who have participated in professional learning about quality interactions. The target population included teachers with all of the following characteristics:

- Taught at the secondary level in CPS during the 2022-2023 school year.
- Taught or co-taught math, science, social studies, or English language arts core courses. This included special educators, reading specialists, and math coaches who taught or co-taught core content courses.
- Participated in quality interactions professional learning offered by CPS during the 2020-2021 or 2021-2022 school year.
- Taught students who were identified as English learners in at least one class during the 2022-2023 school year.

Although some teachers who fell outside of the target group of content-area teachers (e.g., ESL teachers or music teachers) participated in the quality interactions professional learning, they were not the

[5] This refers to formulaic phrases and sentences used in academic discourse and collaboration. For example, when building off a classmate's idea, a student might say, "What you just said makes me think that…" When disagreeing respectfully with a classmate, a student might remark, "While I understand your perspective, another way of thinking about the issue is…"

intended audience and were excluded from participating in this research study. The participant group was limited to CPS secondary teachers of core content (math, science, social studies, and English language arts, including special educators who taught those subjects) because of the school district's initiative, mandated by the settlement agreement with the U. S. Department of Justice, to provide secondary core content teachers with professional learning about sheltered content instruction (United States Department of Justice, 2019).

Due to my professional role with CPS, I possessed records of the names, contact information, and job assignments for the approximately 350 individuals who participated in the quality interactions workshop or series. I determined that 194 of the 350 individuals were members of the target population (see Table 2). Then, I developed a spreadsheet of the members of the population, which I used to randomly assign them with unique identification numbers, and which specified the teachers' content areas, school names, and the size of the English learner population at their schools. Collecting all of this information in one location aided with selecting a sample of the population for the classroom observations and interviews.

Table 2

Number of Population Members by Content Area and Size of English Learner Population

Content Area		Size of English Learner Population	
English language arts	29	Small	72
Math	36	Medium	110
Science	36	Large	12
Social studies	34		
Special education	59		

Sampling Plan

For the survey, the sample consisted of the entire population because the number of teachers who participated in the quality interactions professional learning was relatively small. With 194 teachers in the target population, I needed to receive completed surveys from 130 members of the target

population to have a margin of error of ±5% at a 95% level of confidence (Krejcie & Morgan, 1970, as cited in Required Sample Size, n.d.).

To select the participants for the classroom observations and interviews, I employed stratified sampling. First, I categorized the members of the population by their assigned role within the school district (English language arts, math, science, social studies, or special education teacher). Then, I categorized these teachers further as working at schools with small, medium, or large populations of English learners[6]. I assigned each teacher a random identification number and sorted the teachers by random identification number within each content-area group. After that, I used random conditional selection to choose one participant from within each content-area group and with the intention of selecting teachers from schools with differing sizes of English learner populations to increase the likelihood of coverage of all strata. If any of the selected teachers chose not to participate in the research study, I invited a different teacher from the same content area category and representing a school with the same size English learner population, if possible. Due to a lack of responses from invited participants and a concern about the length of time recruitment was taking, I transitioned to inviting five, and then later 10, teachers at a time. If more than one teacher from a content area was interested in participating in the observations and interviews, I selected the first teacher to accept the invitation. All five teachers who were ultimately selected (see Table 3) participated in both classroom observations and interviews (see Appendix B).

[6] The schools' EL populations are classified as small if fewer than 10% of the students at the school are identified as ELs, medium if the size of the EL population is between 10% and 20%, and large if the EL population is greater than 20% (County Public Schools, 2020).

Table 3

Details About Observation and Interview Participants

Name	Content Area	Size of English Learner Population	Type of Professional Learning	Number of Years Teaching	Race/Ethnicity	Bilingual/ Multilingual
Elijah Miller[7]	English language arts	Medium	2-hour workshop	24	Black and/or African American	No
Sally Kennedy	Math	Small	2-hour workshop	30	White and/or Caucasian	No
Jenny Lambert	Science	Medium	2-hour workshop	19	White and/or Caucasian	No
Jamal Washington	Social studies	Medium	2-hour workshop	7	Black and/or African American	No
David Buckley	Special education	Large	2-hour workshop	9	White and/or Caucasian	No

Categorizing and selecting the members of the population in this manner increased the likelihood that participants represented all content areas and English learner population sizes (Fink, 2017). Including such variation among participants mirrored the diversity of learning situations within CPS, allowing for multiple perspectives to be heard. It also allowed for data collection that was more likely to represent the perspectives and level of implementation of the overall population.

Data Sources

There were three data sources for this research study: surveys, classroom observations, and interviews. Using a variety of data tools allowed for both qualitative and quantitative data collection. Also, using three different data sources provided an opportunity to check the fidelity of the data. For example, surveys and interviews gave participants an opportunity to self-report implementation that might have taken place in their classrooms. Meanwhile, using classroom observations let me compare

[7] Pseudonyms are used to refer to all observation and interview participants.

what I saw during instruction with what the teachers reported about their own instructional practices. Both interviews and surveys gave teachers opportunities to share reasons for the level of their classroom implementation of the quality interactions professional learning. Each data source served a slightly different purpose in studying the research questions.

Surveys

I developed a survey (see Appendix C) to collect data relevant to CPS secondary content teachers' implementation of their professional learning about facilitating quality student-to-student interactions. Participants completed this survey using Qualtrics to self-report their implementation of the quality interactions professional learning and any factors that aided or impeded their implementation. The survey had 14 questions and was intended to be as short as possible while still collecting information that was critical to the research. The survey began with factual questions, rather than with questions about opinions, to encourage participants to feel more comfortable with responding initially (Fink, 2017). Keeping the survey brief and making the participants feel comfortable increased the likelihood that teachers would respond to the survey.

There are a variety of benefits to using surveys for data collection. In contrast to classroom observations, which provide a snapshot in time of classroom instruction, surveys can capture implementation that might be missed if only using periodic classroom observations. Online surveys are accessible and inexpensive to administer (Fink, 2017) and allow for data collection from a large number of participants.

Prior to administration, I pre-tested and pilot tested the survey (see Appendix D) to improve the function of the survey administration process (Fink, 2017). Pre-testing included feedback from a panel of experts on professional learning and teaching English learners. Their feedback (see Appendix E) was valuable in evaluating the validity of the survey questions. In addition to this panel of experts, I intended for the pilot testing process to include teachers who attended quality interactions professional learning

but were not members of the target population. Unfortunately, none of the teachers I invited were able to participate in the pre-testing process. Engaging in the pre-testing and pilot testing process was helpful in obtaining meaningful feedback that improved the survey instrument and the administration process prior to administration.

Classroom Observations

Another data tool in this study was an observation protocol (see Appendix F), which attempted to standardize observations by focusing the observation on aspects of classroom instruction that are relevant to the research (Hatch, 2002). This observation protocol consisted of a chart that provided space to record the date and time of the observation, the school, the subject, and the teacher's random identifier. Also, the observation protocol included checkboxes to indicate teachers' implementation of the various components of the quality interactions professional learning. There were separate columns of checkboxes, one for complete implementation and one for attempted implementation, to align with the idea that implementation can occur along a continuum (Klein & Riordan, 2009; Knight, 2021). There was also a column of checkboxes to indicate if the specific topics from the quality interaction professional learning were not observed during the lesson. The observation protocol provided space for other notes, such as explanations of why I chose between complete or attempted implementation or ways teachers facilitated quality interactions among students that were not captured in the section with checkboxes. One of the questions on the survey asked what might be an indication that a teacher is implementing the quality interactions professional learning. Based on participants' responses to this survey question, I included notes on the observation protocol that aligned with teachers' ideas of what implementation looks like. The notes section in the observation protocol allowed for collecting data about evidence of professional learning implementation from my perspective and from the perspectives of the participants.

Interviews

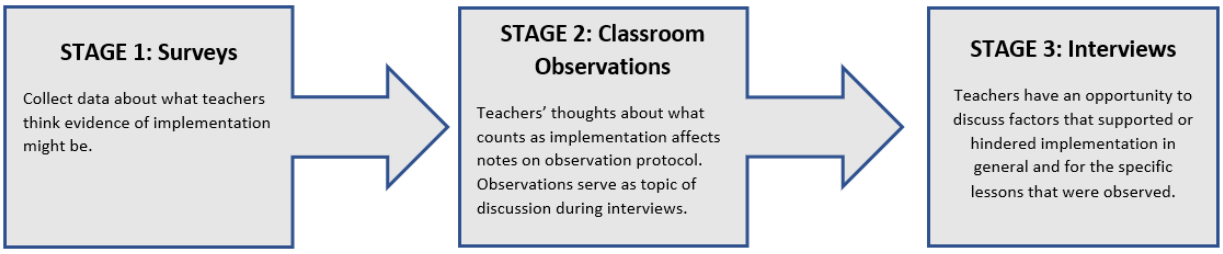
I interviewed five of the participants virtually using Zoom. To structure the interviews, this study used an interview protocol consisting of a script with introductory remarks, opening questions, four main questions, some of which included sub-questions, and closing questions (see Appendix G). Each main question connected with the study's research questions to align the discussion with the objectives of the research (Hatch, 2002). These interviews included member checks when asking participants if the researcher understood their perspective and also when providing the transcript to participants for their review. The inclusion of interviews allowed me to access participants' perspectives and perceptions about their self-reported levels of implementation and the factors that supported or hindered their implementation.

Data Collection

The approach to data collection for this research study was a combination of quantitative and qualitative methods. First, I used surveys to collect data about teachers' perspectives on their implementation of the quality interactions professional learning and factors affecting their implementation. After gathering data from the surveys, I conducted classroom observations to determine whether teachers were facilitating quality interactions during classroom instruction. During the observations, I used teachers' perspectives about what implementation of their professional learning looks like, as reported on the surveys, to take notes about what was occurring during classroom instruction. The surveys initially were distributed before the other types of data collection began, although data collection through surveys and classroom observations overlapped slightly. The survey process and classroom observations took place over multiple weeks. After the classroom observations took place, I scheduled interviews with participants to discuss their implementation of the quality interactions professional learning in general and with respect to the specific lessons I observed.

Figure 2

Stages of Data Collection



Survey Data Collection

Prior to beginning the data collection for the survey, I requested feedback about the survey from members of the CPS English Language Development Office, the CPS Professional Learning Office, and teachers who attended the quality interactions professional learning but were not members of the population (see Appendix D). Although teachers declined the invitation to provide feedback, staff members with expertise in teaching English learners and in professional learning did provide feedback. I asked this panel to review the questions participants would be answering in an effort to increase the validity of the questions. Based on the feedback from the panel, I made an adjustment to the data collection plan. Because of the suggestion from a panel member, I informed secondary English learner department chairs and lead teachers about my research study and requested that they encourage their content colleagues to respond to the survey. I also made some minor revisions to the survey (see Appendix E) based on feedback from the pre-testing and pilot testing process. Engaging in the pre-testing and pilot testing process was helpful in obtaining meaningful feedback that improved the survey instrument and the survey administration process prior to survey administration.

Next, I emailed a letter to potential survey participants to explain the purpose of the survey and their requested involvement (see Appendix H). The survey data collection took place using Qualtrics. Qualtrics displayed which participants completed their survey, and I sent reminders to participants who had not completed their survey, in alignment with my survey administration plan (see Appendix I).

Survey data was stored securely in Qualtrics in accordance with the data management plan (see Appendix J).

Classroom Observation Data Collection

Prior to conducting classroom observations, I collected teachers' schedules so that I knew which class periods contained English learners and what time the classes began and ended. Next, I collected a list of dates that were not convenient for the observations because of schedule changes or abnormal class periods due to exams or special events. My role as an instructional specialist in the central office for the school district typically allows me to access any classroom in CPS without asking for permission, and CPS has given me permission to engage in classroom observations for the purpose of this research study.

I observed five participants' classroom instruction twice each for approximately 45 minutes each visit using an observation protocol (see Appendix F) as a silent, non-participatory observer. Participants knew why I was coming to observe classroom instruction. Although there was a possibility that participants knowing what I was looking for in the observations caused them to adjust their instructional practices somewhat (Hatch, 2022), withholding this information from participants posed an ethical concern. To increase the chance that the classroom instruction I observed was as typical as possible, the participants did not know in advance when I would be visiting their classrooms. Unannounced classroom observations might have caused the participants some anxiety, yet observing typical classroom instruction was key for strengthening the validity of the observation data. Each time I visited a participant's classroom, I completed a blank copy of the observation protocol, and I saved these completed documents according to a specific data management plan (see Appendix J).

When completing the observation protocol, I intended to take notes about the examples teachers had indicated in their survey responses would be evidence of implementation of the quality interactions professional learning. During observations, I only recorded instances of teachers'

characteristics of implementation if how they were used led to students talking to each other. For example, if teachers used wait time to encourage individual students to raise their hands and respond directly to the teacher with an answer to a question, I did not record “wait time” on the observation protocol. If a teacher had used wait time to encourage students to respond to what other students had just said, however, I would have made a note of that on the observation protocol.

Interview Data Collection

The same five teachers who were participants in the classroom observation data collection also participated in interviews. These interviews provided an opportunity to gain insight into teachers’ perspectives regarding their implementation of the quality interactions professional learning, including during the specific lessons I observed. I began by determining the availability of the five participants; then, I scheduled individual interviews at times that were mutually convenient for the participant and for me. Once I scheduled the interviews, I conducted them over Zoom. Because of the possibility of restrictions on in-person meetings due to the COVID-19 pandemic, I decided that there would be fewer potential changes to the logistics of the interviews if they were scheduled virtually. Additionally, participants who might have needed to quarantine due to COVID-19 illness or exposure were still able to participate in the interviews because they took place virtually. If the interviews took place in-person, mask-wearing could have made it difficult to see participants’ facial expressions; virtual interviews meant that participants’ faces were unobstructed.

When the interviews began, I used the interview protocol (see Appendix G) with pre-planned questions, but I also asked unscripted follow-up questions as needed. At the end of the interviews, I summarized the main themes that I heard and checked with the participants to determine whether my understanding of their responses was accurate. Upon consent from the participants, I recorded the sessions using Zoom’s automatic recording feature, which also provided a transcript of the session that I edited manually as needed. I offered to provide the transcript of the interview sessions to participants

for their review to examine and improve upon the accuracy of the transcription. The transcript of the interview sessions used pseudonyms and did not name the teachers' schools to protect the confidentiality of the participants. I saved and stored these transcripts in UVA Box in accordance with the data management plan (see Appendix J).

Boosting Participation Rates

After selecting the sample of teachers, it was important to maintain their interest in participating in the research. In an effort to boost participation rates, I took a variety of steps. First, I used personalized salutations in the correspondence inviting teachers to participate in the research (see Appendix B). Personalizing the communication sent the message that each recipient of the communication was an important part of the research process. I also assured the recipients about the confidentiality of the data I planned to collect so that they were not concerned about violations of their privacy. In case there were any teachers who were undecided about whether they would participate, I was available for individual appointments for those who were interested, during which teachers in the selected sample were welcome to ask questions or discuss their concerns.

To minimize the toll of completing the survey, I intended to make it as easy as possible for teachers to complete. Making the survey quick to complete, while still collecting information that was critical to my research questions, helped with encouraging teachers to respond to the survey. In addition, writing questions that were easy to understand reduced the cost of responding to the survey because it minimized the frustration that could be caused by confusing questions. Because the survey was going to take some of the participants' valuable time, at least I could make efforts to reduce the inconvenience for them. Also, I followed the survey administration plan (see Appendix I) to address non-response to the survey. Periodic reminders and a potential adjustment in the format of the survey encouraged additional teachers to complete the survey (Fink, 2017). By reducing the cost for the

teachers and by following up with teachers who had not completed the survey yet, it was likely that participation rates increased.

For the interviews, I asked the participants to select from dates and times that would be most convenient for them. After selecting a date and time for the interviews, I sent Outlook calendar invitations to the participants, which blocked that time off on their calendars and reminded them of the appointment shortly before the interview was scheduled to begin. One week prior to the date of the interview, I sent participants an email reminding them of the upcoming appointment. Similarly, I also sent a reminder email the day prior to the interview. By taking all of these steps, I boosted the participation rate.

Participation rates might have increased if the benefit to participants was maximized. The main benefit of participating in the research was to help improve teachers' experiences with professional learning and, consequently, students' educational experiences. Teachers' participation in the research had implications for improving professional learning for the school district, which could have an impact on what instruction is like for students, especially for those who are identified as English learners. Also, participating in the research gave teachers an opportunity to have a voice and an influence in decisions affecting them at the district level. To maximize the value of those benefits, I appealed to teachers' sense of professionalism by telling them in the survey and interview sessions that they had valuable perspectives that only they could provide. Hopefully making the teachers feel like respected professionals connected with their desire to provide their students with a high-quality education.

A more tangible benefit that I provided to teachers who participated in all three types of data collection was recertification points that they can use to renew their teaching licenses. The state department of education permits teachers to earn recertification points for participating in an educational project (State Department of Education, 2022). After requesting participants' permission, I recorded their recertification points in the CPS database for professional learning. Providing this benefit

to teachers connected with a requirement they already needed to complete. The additional incentive boosted teachers' participation because they were interested in completing a portion of the license renewal requirements. Also, participants who completed the survey were entered into a drawing for a $50 Amazon gift card. These benefits were significant enough to be meaningful for some of the participants but are small enough to have a minimal effect on the content of participants' responses.

Data Analysis

I used sequential mixed methods integration for my approach to data analysis. I combined quantitative data from surveys and classroom observations with qualitative data from interviews to allow for fidelity checks. In particular, classroom observations were useful in confirming or contrasting teachers' perceptions about their implementation as reported in the surveys or during the interviews. Analyzing the data sequentially provided an opportunity for me to learn from each stage of the data analysis and to apply my new understanding about the problem of practice to the next stage of data collection and analysis. Instead of entering the research process with set procedures, there was flexibility for adjustments as needed.

Quantitative Data Analysis

My data analysis began with quantitative data from surveys. The first step in analyzing the quantitative data involved cleaning up the data. For example, I removed records for the five teachers who opened the survey but did not answer any questions. Also, I noticed that for many of the teachers (40.7%), the type of professional learning they indicated they participated in did not match the detailed records I maintained while keeping track of attendance for compliance with the settlement agreement between CPS and the U.S. Department of Justice (see Tables N1 and N2, Appendix O). Because of this discrepancy, I added a separate column in my data analysis spreadsheet with the information that matched the attendance records. I chose to use the information that matched attendance records for

data analysis, rather than the responses that teachers provided, because I deemed the attendance records more likely to be accurate.

Next, I created a codebook for the survey (see Appendix K). This codebook guided the process of using descriptive and inferential statistics to understand the data better. For the observation protocol and the survey, I used descriptive and inferential statistics to identify patterns in the data and to look for noticeable differences among subgroups. For example, calculating the mean, median, and mode for various questions provided an overview of CPS secondary teachers' perspectives for each question. Performing this type of descriptive statistical analysis was useful for revealing patterns and trends in survey responses.

The primary type of inferential statistics I used was Fisher's exact test. This test determined whether there was a relationship between variables and was possible to use with a small sample size. Fisher's exact test typically consists of comparisons of two pairs of characteristics, such as comparing math teachers and not-math teachers with the frequency of implementation. For situations in which there were more than two options for survey answer choices, I condensed the answer choices so they fell into only two categories. For example, I grouped *frequently* and *sometimes* together, and I also grouped *seldom* and *never* together. Because I wanted to compare more than two groups of teachers with their survey responses, I ended up running multiple tests (e.g., frequency of opinion continuum implementation for math versus not-math teachers, frequency of opinion continuum implementation for science versus not-science teachers, etc.). I used the Fisher's exact test to determine whether to reject the null hypothesis that there is no relationship between implementation of the quality interactions professional learning and teachers' content area or the size of the English learner population at their school. Using Fisher's exact test also allowed me to determine whether any patterns that existed were statistically significant.

Qualitative Data Analysis

My qualitative data analysis began with the constructed response questions on the survey. I developed codes to help me categorize teachers' responses (see Appendix L). This categorization identified patterns in teachers' responses about implementation of the quality interactions professional learning. I used teachers' ideas about what they consider evidence of teacher implementation of the quality interactions professional learning to take notes on my observation protocol. These ideas came directly from the survey responses, and I included them on the observation protocol template (see Appendix F). Although I did not include every idea that a teacher suggested on the survey, I included any that I deemed related to the concept of student-to-student discourse and that could be noticed during an observation.

When analyzing the interview data in this study, my first step was to develop *a priori* codes (see Appendix M) inspired by the literature review (Bazeley, 2013) and research questions. Next, I used an inductive approach by developing codes and categories (see Appendix L), as well as identifying patterns and relationships, through exploration with the data (Check & Schutt, 2017; Patton, 2015). I read the interview transcripts, developing new, emergent codes in an effort to consider participants' perspectives instead of relying on my preconceived notion of what participants would say. The emergent codes included an *in vivo* code (i.e., "If it's not broke, why fix it?"), which used a participant's own terminology (Bazeley, 2013). After identifying new codes, I re-read the entire transcript, coding relevant sections with the emergent codes. At times, I applied multiple codes to the same transcript segments, which was an indication that the codes had some sort of relationship with each other (Bazeley, 2013). Coding for the interview data was a cyclical process (Check & Schutt, 2017; Miles & Huberman, 1994, as cited in Bazeley, 2013). Upon reviewing my codes, I considered whether I needed to revise them to be specific, descriptive labels (Bazeley, 2013; Court, 2018).

With the data coded, I grouped the existing and emergent codes together into code categories (Bazeley, 2013; Court, 2018). Throughout the coding process, I added comments to the memo field of my coding spreadsheet to support the data analysis and interpretation process and to keep track of my thoughts as I was coding (Patton, 2015).

After reviewing the code categories, I selected a few that emerged as particularly notable categories. I looked for categories representing comments from the participants that seemed important to them and that brought new insight to the problem of practice. I reviewed the sections of the interview transcripts that related to the prioritized categories, and I considered the message that participants communicated about those categories. Then, I recorded those messages as theme statements, which I used to identify findings of the study. I saved relevant data analysis documents in my UVA Box account to safeguard the data (see Appendix J).

Finally, I compared data from the interviews and surveys with the data from classroom observations to determine if what teachers reported about their implementation matched with what I saw while visiting their classrooms. Each stage of the data collection process allowed my understanding to grow as a result of information and insight from the participants. The involvement of the participants and my interactions with them helped me to refine my understanding of the problem of practice.

Ethical Considerations

Before beginning with data collection, it was important to obtain all the required approvals. The first step in the process was to receive approval from the Institutional Review Board (IRB). After receiving IRB conditional approval, I submitted an application to the CPS Office of Program and Evaluation to receive their permission to engage in research within CPS. Only after receiving approval from both the IRB and CPS did I begin the research process. I also obtained completed consent forms from participants prior to beginning data collection.

Some ethical considerations were whether teachers felt pressured into participating in the research and whether my close relationship to all aspects of the research process influenced participants' responses. I work as an instructional specialist in the English Language Development Office in the central administrative office for CPS. Although I have a teacher-level position that is equivalent by contract to that of a teacher working at a school, participants might have perceived that there was a power imbalance between central office and school-based positions. Due to this perceived power imbalance, there was a possibility that some teachers might have felt like they were obligated to accept the invitation to participate in the research or that I might have been evaluating their teaching practices. In addition, the participants were aware that I designed and facilitated the professional learning workshop and series about quality interactions. Knowing that I was collecting data about the participants' implementation of professional learning that I led, they might have been hesitant to admit if they were not implementing the professional learning in their classrooms because of a desire to present a certain impression to central office staff. To minimize teachers' hesitancy, I clarified at the beginning of the interviews and during office hours that I was not expecting or hoping for certain types of responses and that any perspectives they provided would be welcomed.

Assumptions, Delimitations, and Limitations

Although this research study was crafted intentionally, it was inevitable that there were limitations and delimitations. The findings of this research are meant to identify whether teachers were implementing the content of the quality interactions professional learning workshop that they attended so that CPS can determine next steps regarding the professional learning initiative. Due to this focus, there was an emphasis on the perspectives and behaviors of teachers but not of students, administrators, or community members. When reflecting upon the findings, it is important to remember that some individuals' perspectives are not being considered. Additionally, the scope of the research was intended to provide information about whether teachers were applying the content of the

professional learning to their instructional practice; the research study does not provide information on whether any implementation, if present, improves student outcomes for content acquisition or language development.

One limitation of this research study involved the recruitment of participants. The teachers who agreed to participate in the research study might have been more interested in the topic than a typical teacher. Those who did not agree to participate in the research might have been uninterested in the topic, might have felt too busy to participate, or might have been hesitant to participate if they were not implementing the quality interactions professional learning. Similarly, the survey response rate of 58% made me wonder whether only the most organized teachers responded, or perhaps only those who felt confident in their implementation of the professional learning. If the teachers self-selected their participation in these ways, the data could have become skewed. To address this concern, I included a Likert question on the survey about participants' confidence level with their implementation. My approach to sampling and boosting response rates attempted to counteract these factors, yet some degree of participant bias was unavoidable.

Furthermore, there were delimitations related to the selection of participants for classroom observations and interviews. I intentionally selected participants who taught each of the core content areas, including special education, and I also aimed to choose participants who would represent schools with small, medium, and large populations of English learners. I did not, however, include the type of professional learning in which teachers participated as part of the selection process. It turned out that each of the five observation and interview participants attended a 2-hour workshop about quality interactions; none of them participated in the 3-part quality interactions series or the school-based coaching and lesson planning. This choice in participant selection meant that I might have missed out on insight from teachers who participated in each of the types of quality interactions professional learning. Moreover, none of the observation and interview participants identified as bilingual or multilingual.

Although it would have been interesting to note whether there were differences in implementation of the quality interactions professional learning between monolingual and multilingual teachers, it might not have been possible to recruit participants to fit every possible category. While selecting participants solely based on the content they taught and the size of their school's English learner population, at times it was challenging to find teachers who were willing to participate; further narrowing the options for potential participants might have led to a lack of suitable teachers willing to participate in the research study.

Other concerns correspond with the research design. One limitation was my involvement in both the professional learning and the research process. The participants were aware that I developed and facilitated the quality interactions professional learning workshop. Because I conducted the data collection, especially the interviews, it was possible that some of the participants did not feel comfortable being honest if they had negative comments. Although this possibility existed, I tried to establish a safe environment in which participants felt comfortable sharing their true thoughts and feelings by clarifying that any and all responses were welcome. Furthermore, the close relationship between my work with the CPS English Language Development Office and the topic of this research meant that I might have been bringing preconceived notions and biases to this research associated with CPS teacher's existing instructional practices related to English learners and quality interactions, such as my preconception that many teachers design content instruction with monolingual English speakers in mind, rather than intentionally planning for the needs of their English learners. The potential for bias existed, but the close link between my work and this research also brought unique insight to the research process.

In addition, there was a possibility that participants' self-reported data, such as the surveys and interviews, did not accurately represent their typical classroom instruction. Self-reported data, such as surveys, bring the risk of participants not taking the data collection seriously, feeling like they are too

busy to complete the survey thoroughly, or viewing their own teaching differently than an outside observer might (Glennie et al., 2017). Fidelity checks with classroom observations were helpful in balancing the reliance on self-reported data.

Another consideration involved teachers' behavior during the classroom observations. It is important to note the influence that the researcher has on the inquiry process. The presence of an observer can affect how participants behave during observations (Hatch, 2002), such as when the participants knew that the researcher observing them worked with the CPS English Language Development Office. The participants knew why I was visiting classrooms to observe, so it was possible the participants changed their plan for instruction when they saw me walk in the room. There was a chance that what I observed might not have been an example of typical classroom instruction. Additionally, these classroom observations were snapshots in time; if I did not notice implementation of the quality interactions professional learning during the observations, that does not necessarily mean that the participants were never implementing the content of the professional learning. These factors are worth considering when reflecting upon their potential impact on the research findings.

Summary

This research plan involved an investigation of teachers' implementation of the quality interactions professional learning initiative in CPS. Using sequential mixed methods, I collected data about secondary core content teachers' implementation from surveys, classroom observations, and interviews. Following the data collection, I analyzed the data to determine themes and patterns that emerged.

Chapter 4: Findings

This chapter presents findings based on analysis of survey, classroom observation, and interview data. Data collection and analysis focused on two research questions:

- To what extent are CPS secondary core content teachers transferring professional learning about quality interactions to classroom instruction?
- What has facilitated or hindered CPS secondary core content teachers' transfer of professional learning about quality interactions to their classroom instruction?

Certain patterns emerged from the data and led to the following five findings (see Appendix N for alignment between the research questions and findings):

1. *Teachers report varying levels of implementation of the quality interactions professional learning.*
2. *The level of implementation teachers report does not necessarily align with the level of implementation observed during classroom instruction.*
3. *The design of teachers' professional learning appears related to classroom implementation.*
4. *Teachers' beliefs might support and hinder the transfer of their professional learning to classroom instruction.*
5. *The demands of teaching can hinder teachers' transfer of professional learning to classroom instruction.*

Finding 1: Teachers Report Varying Levels of Implementation of the Quality Interactions Professional Learning

Teachers' Placement on the Implementation Continuum

According to teachers' self-reported survey (see Appendix O) and interview data, most CPS secondary core content teachers indicate that they have implemented the quality interactions professional learning in their classroom instruction, but the extent of that implementation varies. Survey

participants selected a description that best matches their implementation of their professional learning (see Table 4), and responses represented each stage in the continuum of implementation (Klein & Riordan, 2009; Knight, 2021) from no implementation to making novel adaptations that supported sustained academic discourse among students. The responses were spread fairly regularly, with 15-17% of respondents choosing each option, with the exception of two of the stages of implementation. Only eight teachers (7%) indicated that they did not implement the quality interactions professional learning at all, whereas 27 teachers (24%) selected the stage of implementation that involves making adaptations that were discussed during the professional learning. Reviewing teachers' responses to this survey question suggests that there is a sizeable range in the extent of their implementation of the professional learning.

Table 4

Teachers' Responses to Survey Question About Continuum of Implementation

Stage of Implementation	Q4: Which of the following best describes your implementation of the Quality Interactions professional learning? (select one response)	Number of Responses	Percent of Responses
1	I have not implemented the Quality Interactions professional learning with my students.	8	7%
2	I tried to implement the Quality Interactions professional learning with my students, but I don't think my implementation was aligned with the ideas and examples from the professional learning.	17	15%
3	I implemented the Quality Interactions professional learning with my students, and I referred back to the professional learning materials to try to replicate the examples.	18	16%
4	I felt comfortable implementing the Quality Interactions professional learning with my students. What I did with my students was just like the example(s) from the professional learning even though I did not refer back to the session materials as a resource.	18	16%
5	I implemented the Quality Interactions professional learning with my students. To do so, I made some adaptations that were discussed during the Quality Interactions professional learning.	27	24%

6	I implemented the Quality Interactions professional learning with my students. To do so, I made some adaptations based on the needs of my particular students. I thought of these adaptations on my own, and they supported sustained academic discourse among students.	19	17%

When comparing teachers' stage of implementation with the size of the English learner population and teachers' content areas, there are some interesting patterns to note. As the size of the English learner population grows, the mean for the stage of implementation also increases slightly (see Table 5). There is a similar pattern with the median for the stage of implementation. A T-test comparing the mean stage of implementation at schools with small versus large English learner populations ($p=0.595$) does not indicate, however, that this trend is statistically significant. Also, there might be a correlation between the content area of teachers and the extent that they implemented their professional learning about quality interactions. It appears that math teachers report the lowest stage of implementation, with a mean of 3.47 and a median of 3, compared to the other teachers; in contrast, English language arts teachers report the highest stage of implementation, with a mean of 4.41 and a median of 5. A t-test comparing the mean stage of implementation for math versus English language arts teachers ($p=0.074$) does not show definitive statistical significance, although the difference in means might be statistically significant if the sample sizes were larger.

Table 5

Analysis of Teachers' Stages of Implementation by Size of English Learner Population

Size of English Learner Population				Teacher's Content Area				
	Small	Medium	Large	English Language Arts	Math	Science	Social Studies	Special Education
Mean	3.77	3.94	4.13	4.41	3.47	3.95	3.50	4.06
Median	4	4	4.5	5	3	4.5	4	4

Teachers' Application of Specific Aspects From the Professional Learning to Their Classroom Instruction

There is variation in which aspects from the professional learning teachers implement in their classrooms. According to the survey responses, CPS secondary core content teachers tend to use open-ended questions and prompts more frequently in their classroom instruction than the other aspects of the quality interactions professional learning (i.e., the language of interaction, giving students feedback about their interaction, opinion continuum, information gap, and role play). For example, twice as many teachers (72) expressed that they frequently used open-ended questions than the language of interaction (36) during classroom instruction (see Table 4). Classroom observations echoed teachers' survey responses. During classroom observations, each of the five participants asked students at least one open-ended question.

Interestingly, teachers reported a high frequency of open-ended questions and prompts in their classroom instruction even though some of them reported there was little to no change in their instructional practice after participating in professional learning about quality interactions. A possible explanation for this difference is that teachers were already using open-ended questions and prompts in their classrooms before they participated in the quality interactions professional learning. One survey respondent commented about the pre-existence of open-ended questions in classroom instruction prior to the professional learning. Furthermore, when discussing whether he has implemented the quality interactions professional learning, middle school social studies teacher Jamal Washington stated, "I've applied parts of it. You know, as far as asking students open-ended questions, but I think most teachers do that anyway in their course of finding out how well students understood what was being discussed in class" (J. Washington, personal communication, Dec. 8, 2022). With this statement, Mr. Washington is suggesting that most teachers ask open-ended questions, even if they have not participated in professional learning about quality interactions. He is also implying that his own use of open-ended questions is connected to his existing instructional practices and is not necessarily implementation of

the quality interactions professional learning. It is unclear how many of the teachers who reported using open-ended questions and prompts with students already did so prior to participating in the quality interactions professional learning.

Table 6

Number of Teachers Who Selected Each Frequency Option

	Frequency of Implementation			
Aspect	Frequently	Sometimes	Seldom	Never
Open-Ended Questions	72	31	1	1
Prompts	70	32	2	1
Language of Interaction	36	50	16	2
Feedback About Interaction	25	59	13	5
Opinion Continuum	12	56	25	11
Information Gap	14	53	24	11
Role Play	15	34	31	24

Teachers reported using the three structures (i.e., opinion continuum, information gap, and role play) less frequently than some other aspects of the quality interactions professional learning. For example, 24 survey respondents indicated that they never use a role play structure with their students (see Table 6). A possible explanation for this difference is that these structures are very specific, whereas teachers can embed the other aspects of the professional learning into a wide variety of classroom activities and structures.

When applying Fisher's exact test to compare teachers' self-reported frequency of use of the structures with the content area they teach, crosstabulations revealed some patterns in the data. Analyzing the survey data for a p-value less than 0.05 as a measure of statistical significance, there are a

few relationships of significance. Compared to teachers of other content areas, math teachers were less likely to implement opinion continuum (p-value of 0.042), information gap (p-value of 0.014), and role play (p-value of 0.008) structures in their classroom instruction (see Table 7). Meanwhile, special education teachers were more likely to implement information gap (p-value of 0.037) and role play (p-value of 0.029) structures compared to teachers of other content areas. Special education teachers' implementation of the opinion continuum structure (p-value of 0.057) narrowly missed the threshold for statistical significance, but it follows the pattern of special education teachers being the most likely to implement the specific structures from the quality interactions professional learning. It is worth noting that special education teachers reported being most likely to implement specific structures, even though they did not rate themselves as highly on the continuum of implementation as English language arts teachers in terms of the sophistication of their implementation.

Table 7

Implementation of Aspects of the Quality Interactions Professional Learning by Content Area

	Teachers' Content Area				
Aspect	ELA	Math	Science	Social Studies	Special Education
Open-Ended Questions	0.261	0.669	0.638	0.717	0.435
Prompts	0.334	0.078	0.508	0.606	0.318
Language of Interaction	0.176	0.112	0.244	0.268	0.075
Feedback About Interaction	0.269	0.216	0.085	0.163	0.079
Opinion Continuum	0.218	0.042*	0.201	0.201	0.057
Information Gap	0.220	0.014*	0.135	0.126	0.037*
Role Play	0.207	0.008*	0.176	0.192	0.029*

*$p < 0.05$

Reported Change in Teachers' Instructional Practice

In general, CPS secondary core content teachers reported that the professional learning about quality interactions caused a change in their instructional practice, although the extent of that change varied. Of the teachers who responded to this particular survey question, 97% indicated that the professional learning caused some degree of change in their instructional practice (see Table 8). The majority of teachers self-assessed their level of change to be either minimal or moderate, with the mean of 2.625 (using the assigned values indicated in Table 8) falling between those two answer choices. Both the median and mode for this survey question were 3, indicating that teachers believed there was a moderate change to their instructional practice after participating in quality interactions professional learning.

Table 8

Teachers' Reported Change in Instructional Practice

	Q3: What level of change, if any, has the Quality Interactions professional learning caused in your instructional practice?	Count	Percent
4	Significant change	8	7%
3	Moderate change	57	50%
2	Minimal change	44	39%
1	No change	3	3%
	Missing value	1	1%

When comparing sub-groups' change in instructional practice using Fisher's exact test, crosstabulations revealed some statistically significant differences related to the size of the English learner population at survey respondents' schools but not related to the content they teach or the format of their professional learning. Comparisons of the level of change in teachers' instructional practice based on the content that they teach did not yield any statistically significant patterns. Similarly, there were no indications of statistical significance when comparing the level of change in teachers' instructional practice with the format of teacher's professional learning. It is interesting to note, however, that all 12 survey respondents who participated in school-based follow-up of their

professional learning workshop(s) indicated that there was at least minimal change in their instructional practice. Comparing the change in instructional practice at schools with small, medium, and large English learner populations, however, uncovered some statistically significant patterns. Teachers at schools with a small population of English learners were less likely to report a change in their instructional practice (p-value of 0.032; see Table 9). Meanwhile, teachers at schools with a medium-sized population of English learners were more likely to report a change in their instructional practice (p-value of 0.009). In spite of this, the patterns in teachers' change in instructional practice when compared with the size of the English learner population might not be so noteworthy due to the manner in which statistical significance was determined. Specifically, using Fisher's exact test required splitting the answer choices into two categories; I paired significant change with moderate change, and I also combined responses for minimal and no change. Most of the survey responses (90%) fell under moderate and minimal change. If the responses had been split more evenly over the four answer choices, it would be clearer whether the manner in which I condensed the answer choices for analysis affected the outcome.

Table 9

Change in Teachers' Instructional Practice Based on Size of English Learner Population

Size of English Learner Population	P-Value
Small	0.032*
Medium	0.009*
Large	0.141

*$p < 0.05$

Teachers' Confidence in Their Implementation

Secondary core content teachers in CPS were fairly confident about their implementation of the quality interactions professional learning. Approximately 90% of respondents indicated that they were either somewhat confident or very confident about their implementation of the quality interactions

professional learning, with an even split between those two answer choices. It is important to note, however, that survey respondents who indicated that they had not implemented the professional learning did not see this question in their survey. Therefore, for this question, respondents only reflect the participants who did implement the quality interactions professional learning.

I used Fisher's exact test to examine whether there were any patterns in teachers' confidence with their implementation. There was no statistical significance in teachers' confidence with their implementation by content area or the size of the school's EL population. In general, teachers who reported a significant change in their instructional practice also reported higher confidence in their implementation (p-value of 0.003; see Table 10). Meanwhile, teachers who reported a moderate amount of change in their instructional practice also reported slightly lower confidence in their implementation (p-value of 0.030).

Table 10

Confidence in Implementation Compared With Change in Instructional Practice

	Significant Change	Moderate Change	Minimal Change	No Change
A little confident	0	3	1	0
Somewhat confident	0	28	16	0
Very confident	7	23	13	1
Completely confident	1	0	5	0
Fisher's exact test	0.003*	0.030*	0.167	0.510

*$p < 0.05$

Finding 2: The Level of Implementation Teachers Report Does Not Align With the Level of Implementation Observed During Classroom Instruction

Although many CPS secondary core content teachers report to have implemented the ideas from the quality interactions professional learning in their instruction, this implementation was not so evident during classroom observations. According to survey data, 77% of respondents considered their implementation to be at the level of replicating or adapting the ideas from the professional learning (see Table 5). Teachers also reported a high usage of aspects of the professional learning, such as open-

ended questions, prompts, the language of interaction, and feedback about students' interaction (see Table 6). Although teachers reported using structures such as opinion continuum, information gap, and role play less frequently than the previously mentioned aspects of the professional learning, most teachers conveyed that they sometimes used those structures (see Table 6).

Classroom observations, however, did not reflect a level of implementation that matched what teachers reported in their survey responses. These observations were only a snapshot in time, and it is possible that teachers were implementing the quality interactions professional learning outside of the designated observation times. Observations of five teachers' classrooms twice each, though, revealed some instructional decisions that teachers made that could be considered attempts at implementation of the quality interactions professional learning. For example, seven of the ten observations included at least one occurrence of a teacher using an open-ended question or a prompt (see Table 11). Each of the five teachers asked at least one open-ended question during their observations. Because all of these open-ended questions or prompts permitted students to respond independently, silently, or not at all, they could not be categorized as complete implementation (see Appendix F). In both surveys and interviews, participants mentioned that it was commonplace for teachers to use open-ended questions prior to participating in quality interactions professional learning, so it is unclear if the observed examples of open-ended questions and prompts were indeed implementation of teachers' professional learning or if they were coincidental and instead a reflection of teachers' pre-existing instructional practices.

Table 11

Number of Classroom Observations Demonstrating Implementation

	Complete	Attempt	Not Observed
Open-Ended Questions or Prompts		7	3
Language of Interaction			10
Feedback About Interaction		1	9
Opinion Continuum			10
Information Gap			10
Role Play			10

Implementation of the remaining aspects from the professional learning during observations was scant. None of the teachers instructed students to use the language of interaction, nor did they use opinion continuum, information gap, or role play structures (see Table 11). During one observation, middle school English language arts teacher Elijah Miller provided students with feedback. Students wrote sentences containing appositives, and Mr. Miller requested that students read their sentences to a partner. He told students, “Make sure you’re reading the comma out loud as you read your sentence” (E. Miller, personal communication, Oct. 28, 2022). In this example, Mr. Miller provided students with feedback about momentarily pausing their recitation when they saw a comma, and there was some degree of interaction between students. The feedback, however, was related to students’ prosody as they read aloud, rather than being related to discourse. For this reason, Mr. Miller’s feedback during student interaction could not be considered a complete implementation of feedback about interaction.

In addition to documenting minimal implementation of five of the aspects from the quality interactions professional learning, classroom observation data also reflected a similar absence of implementation when using the criteria that teachers had suggested. Based on participants’ survey comments about what a teacher might be doing or saying during instruction to indicate implementation of the quality interactions professional learning, observation data included notes about any such indications that led to students talking with each other about academic content (see Appendix F).

Although the observation data does indicate the presence of some of teachers' criteria during the lessons (see Table 12), none of those examples led to students needing to engage in conversations about course content. For example, teachers had arranged students' seats in groups in six of the ten observed lessons, yet merely sitting in a cluster of desks did not mean that students needed to speak with each other about academic content (see Cazden, 2017). If discourse did occur among students, it was optional and not a requirement of students' assignments. Despite participants suggesting that these criteria would be evidence of implementation of the quality interactions professional learning, none of the documented instances were related to required student discourse.

Table 12

Prevalence of Participants' Criteria in Classroom Observations

	Number of Observations
Student grouping	6
Explicit expectations	3
Thought-provoking	3
Students' opinions	3
Asking why	2
Teacher acting as facilitator	2
Scaffolding	2
Sentence starters	1
Wait time	1
Structured activities	0

For some participants, there was a contrast between the level of implementation they referenced in their interview with the implementation evident during classroom observations. In her interview, middle school math teacher Sally Kennedy discussed her reportedly extensive use of open-ended questions with students. She stated:

> You have to be mindful of making sure you're not losing them through lessons like that [lessons Ms. Kennedy believes are not interesting to students because they involve abstract content]. So, it's probably a little more intentional in a lesson like that than the ones that have a little more

> flash to them. So, I would say, yes, it's more intentional in a drier content than a content with more visuals. (S. Kennedy, personal communication, Dec. 5, 2022)

Here, Ms. Kennedy refers to her intentional use of open-ended questions in the observed algebra lesson as a way to engage students in a topic she thinks they would consider to be uninteresting. During the lesson, however, Ms. Kennedy only asked one open-ended question− "Can anyone tell me why?" (S. Kennedy, personal communication, Oct. 28, 2022)− referring to the solution to an equation she had written on the whiteboard. During the interview, Ms. Kennedy proceeded to comment on her use of open-ended questions in the second observed lesson when responding to a question about how the quality interactions professional learning impacted classroom instruction for the observed lessons:

> The other one used discourse much more because they're engaged, and they had some things they could relate it to. They could make connections between the science class and using the balance or scale in science. We had some grocery store references. So, there's a little more discourse- student-to-teacher and student-to-student in classes like that. (S. Kennedy, personal communication, Dec. 5, 2022)

With this comment, Ms. Kennedy appears to equate open-ended questions with discourse. She also expresses that her second, more engaging, lesson supported students in making connections to their background knowledge, which led to discourse. Although Ms. Kennedy perceived the lesson as including open-ended questions and student-to-student discourse, classroom observation data did not back up her claim. Ms. Kennedy did not ask any open-ended questions during the 45-minute observation; in fact, there was no evidence of implementation of any aspects of the quality interactions professional learning. The lesson almost exclusively consisted of teacher-talk, and there were no instances of student-to-student discourse about math. It seems that Ms. Kennedy's view of her own instruction is not in alignment with data collected during observations of her classroom instruction.

Similarly, middle school special education teacher David Buckley's discussion of his observed lessons showed a disconnect compared to his classroom observation data. When commenting upon his implementation during a science lesson about converting metric units, he stated, "even in that class I felt like I got some quality interactions out of that class, even though that's my more difficult class" (D. Buckley, personal communication, Nov. 16, 2022). Data collected during the observation, however, revealed that students did not interact with each other during the lesson. The lesson consisted of a section of extensive teacher-talk, combined with questions to the whole class that went largely unanswered, followed by independent work time. Students were sitting far apart from each other. Mr. Buckley asked one open-ended question during the lesson: "Why would you use millimeters to measure a dime?" Other than that, there was no evidence that Mr. Buckley implemented any aspects of the quality interactions professional learning.

Despite the scarcity of implementation evident during Mr. Buckley's classroom observations, he was fairly positive about his ability to implement the quality interactions professional learning. When asked to identify any potential barriers to implementation, Mr. Buckley responded:

> Nothing. Like I said, it's intuitive to have conversations in class, and the quality interactions is a format that guides teachers to how to do that. It's sort of a natural thing to do, so I don't see any problems with it. (D. Buckley, personal communication, Nov. 16, 2022)

In this statement, Mr. Buckley expresses that engaging students in quality interactions is "intuitive" and "natural," which could imply that teachers do not need professional learning on the topic. Furthermore, Mr. Buckley asserts that he did not encounter any barriers to implementing the quality interactions professional learning with his students, yet there was little to no evidence of implementation in his classroom instruction. Survey responses echoed the idea that some teachers did not encounter barriers to implementing the quality interactions professional learning; when asked to identify barriers to implementation, 11 of the 61 respondents indicated that no barriers existed. With teachers reporting a

lack of barriers to implementing their professional learning, it is surprising that classroom implementation was not more apparent. It is possible that teachers' perception of their own teaching is skewed (see Sunderland, 2000 for similar findings) and that they are not aware of how infrequently students speak to each other about the content during instructional time.

In some cases, the timing of the classroom visits might have prevented observation data from capturing teachers' implementation. Two participants commented about how the observations did not coincide with their best implementation. Middle school English language arts teacher Elijah Miller referenced that he uses many cooperative learning structures with his students, but the observations occurred when he was not using those structures in classroom instruction. He continued to discuss the timing of the observations when he commented, "Right before you came in, when they were working as a table to be able to come up with their answers, there was more interaction" (E. Miller, personal communication, Nov. 30, 2022). Mr. Miller knew that there was not much student interaction during the section of the lesson I observed. His statement expressed that he does implement the quality interactions professional learning, but he was not implementing it at the specific time of the observation. Like Mr. Miller, high school science teacher Jenny Lambert also commented about how the timing of the observations did not align with the best examples of quality interactions. Ms. Lambert remarked:

> After you left, we did a Flipgrid[8] activity where they actually were given a significant figure problem and then they had to come in and communicate back and forth. They did math with their different answers and combined them together and had to explain. Again, forcing them to talk to each other. I mean, force is not the right word- enticing, motivating. (J. Lambert, personal communication, Nov. 15, 2022)

[8] Flip, formerly known as Flipgrid, is a video tool designed to facilitate asynchronous discussions.

In this quotation, Ms. Lambert refers to an activity that required students to apply the science concept of significant figures in discussions with their classmates. She reports to have implemented the quality interactions professional learning through this activity, although her implementation did not occur during the classroom observation. Interview communication with Mr. Miller and Ms. Lambert suggests that teachers might be implementing the quality interactions professional learning, even if there is minimal evidence of implementation in the classroom observation data.

Finding 3: The Design of Teachers' Professional Learning Appears Related to Classroom Implementation

Professional Learning Workshops Can Support Implementation

Participants indicated that professional learning workshops themselves can support teachers' implementation. When asked what can support teachers with implementing the quality interactions professional learning, many of the participants commented about the quality of the professional learning workshop(s). While considering the respondents' comments on this topic, it is worth noting that they were aware that the researcher and the professional learning facilitator were the same person, which could have affected their responses to this question. Eleven respondents mentioned that the content of the quality interactions professional learning workshop(s) aided their implementation (see Table 13). Respondents also noted that offering examples (eight comments), suggesting specific structures (six comments), providing teachers with workshop materials (six comments), and giving teachers opportunities to practice the ideas during the workshop (four comments) supported teachers' implementation. Middle school English language arts teacher Elijah Miller reinforced some of these same ideas with his remark about what teachers think makes professional learning easier to implement:

> I think that they're just much more receptive to getting something new and then being able to immediately use it. Anything that you can do for a teacher where they don't have to do a lot of

> work− they can just take what you have and then immediately apply it. I think that's the best chance that you get of them saying, "Yes, I'm going to do this. Yes, I'm going to try." If it's something easy to implement and something that they can see themselves actually doing. (E. Miller, personal communication, Nov. 30, 2022)

In this quote, Mr. Miller points out the benefit of providing teachers with materials related to specific examples and structures from the workshop. He recognizes that teachers are more likely to implement the ideas from the professional learning when the facilitator gives teachers access to practical, concrete examples that are ready for classroom use. Mr. Miller also commented upon the benefit of providing teachers with ideas of specific structures they can use during classroom instruction:

> Anytime I get a new structure, I'm all for it anytime. I see one that I think that the kids will buy into, and that is new− I think that there's a real value in having newness. Any time that you can provide something for students that is new, there is the initial energy of that. (E. Miller, personal communication, Nov. 30, 2022)

Expanding upon his previous comment, Mr. Miller now expresses that it helps him to implement professional learning when the facilitator shares new ideas for structures to use with students. His experience has shown him that students respond well to the usage of new structures in the classroom, so Mr. Miller is more willing to try new ideas when they come with specific structures he has not learned about before. Based on Mr. Miller's comments, as well as the responses from the survey, participants believe that when workshops are well-designed, teachers find them easier to implement.

Table 13

Survey Participants' Ideas About How Professional Learning Workshops Support Implementation

Category	Number of Comments
Content of professional learning	11
Examples	8
Structures	6
Materials provided	6
Practice during professional learning	4

Attending a Workshop Does Not Necessarily Lead to Implementation

A topic that numerous participants mentioned was the importance of follow-up after attending a workshop, which is also well-represented in published literature about teachers' implementation of professional learning (Darling-Hammond et al., 2017; Guskey, 2021; Hawley & Valli, 1999; Ingvarson et al., 2005, as cited in Parsons et al., 2019; Knight, 2021; Moon, 2001; Penner-Williams et al., 2017; Renyi, 1996; Speck & Knipe, 2001, as cited in Teemant, 2010; Wilde, 2010). Five out of 64 survey respondents who commented about what would support teachers in implementing the quality interactions professional learning indicated that some sort of follow-up would be beneficial, although they did not specify what type of follow-up they would prefer. In addition, all five interview participants mentioned that follow-up would help teachers implement the professional learning. Middle school social studies teacher Jamal Washington pointed out that he has not implemented the quality interactions professional learning much because his experience with the topic was limited to one workshop. He said:

> I think some of the reason why I haven't really implemented it much is because I only had one training on it. And so, I think the biggest thing was that I still would have liked to have had some more trainings on the topic, and how to teach students according to the method as well. And so, I think that really was the biggest thing, because even though you had the training, there wasn't really a lot of follow up… I just don't think that just having one training is going to be enough. (J. Washington, personal communication, Dec. 8, 2022)

In the quotation, Mr. Washington indicates that he would find it useful to have additional training and follow-up beyond the 2-hour quality interactions workshop he attended so that he could understand better how to apply the concept of quality interactions to classroom instruction.

Speaking about professional learning on behalf of more seasoned teachers, middle school English language arts teacher Elijah Miller commented:

> I think that at the end of the day, even though we have to go to them… we've been doing these

> for years and years and years, and so the foundation of it we don't necessarily need. But we do need to be able to apply whatever it is that class is talking about. (E. Miller, personal communication, Nov. 30, 2022)

Unlike Mr. Washington, Mr. Miller does not express the need for more training. Rather, he thinks that veteran teachers have already learned about some of the ideas before. Instead of additional workshops, Mr. Miller feels that teachers need support with the transfer of what they have already learned to their classroom settings.

High school science teacher Jenny Lambert also advocated for the need for follow-up when she declared, "You can give me strategies 'til the cows come home, but I need to be able to implement them" (J. Lambert, personal communication, Nov. 15, 2022). Ms. Lambert expresses that it is not enough for teachers to attend a workshop or for them to have exposure to new ideas; these ideas do no good if teachers are not actively using the ideas in their classrooms. She continued to explain:

> I find, just in general, you take a class or a course like this, and you're like, "This is great! I have all these ideas!" And then you don't really come back around. It's almost like I need to take Quality Interactions Two. How to apply them better or come in with "Here are the things I've tried, and this is what's gone wrong. How do I fix it?" I feel like that would be really supportive. (J. Lambert, personal communication, Nov. 15, 2022)

With her comment, Ms. Lambert is showing agreement with other participants that teachers need some sort of follow-up after attending a workshop, including support with addressing implementation challenges, if they are going to transfer what they have learned to classroom instruction. Survey responses further support the benefit of follow-up; when asked about the change in their instructional practice after participating in quality interactions professional learning, 100% of the respondents who had participated in school-based follow-up (i.e., collaborative lesson planning, peer observations, and/or coaching and feedback on their implementation) indicted that there was some degree of change in their

instructional practice. None of the participants for classroom observations had engaged in school-based follow-up, so it was not possible to compare this aspect of the survey responses with observations of classroom instruction.

Participants' Ideas About Helpful Follow-Up

Participants shared a variety of ideas about what type of follow-up would be most helpful in supporting teachers with implementing the quality interactions professional learning. Middle school special education teacher David Buckley suggested that it would be helpful for a facilitator to contact teachers who have attended the quality interactions workshop to ask how implementation was going and to offer feedback and suggestions (D. Buckley, personal communication, Nov. 16, 2022). He felt that such communication would serve to remind teachers about the content of their professional learning so that they would not forget about the ideas. Middle school English language arts teacher Elijah Miller indicated that veteran teachers would not be receptive to attending additional workshops; rather, they would appreciate the opportunity to see videos of quality interactions occurring in classroom settings. Mr. Miller commented:

> I just need to see really good videos. I just need to see people doing it well. And also, people not doing well is valuable, too. I learn things from that as well. But I feel that when I see a master teacher being able to do something well is when I leave feeling like, wow, I've learned a lot. And so, I think that if [CPS] could do that− videotape people doing really good lessons… I think that if they had a place of just videos, I think they'd have a bunch of better teachers… Especially when I think that that's the one thing that veteran teachers will respect… They'll leave there better. And again, there won't be this negative "I've already heard this one hundred times" kind of thing. There's much more receptiveness, I think, in providing videos. (E. Miller, personal communication, Nov. 30, 2022)

Here, Mr. Miller is extending his perspective to represent all veteran teachers. He asserts that watching videos showcasing strong implementation of quality interactions would be a meaningful learning experience for veteran teachers and would lead to improvements in their instructional practice. Mr. Buckley's idea for communication from a facilitator and Mr. Miller's idea about showing teachers videos of expert teachers implementing the new ideas are both examples of ways that participants would like CPS to provide follow-up for individual teachers.

Participants also shared ideas about follow-up involving collaboration with other educators an idea referenced in Vera et al.'s research (2021), which found that teachers were more interested in collaborating to meet the needs of English learners than in engaging in such learning independently. For example, middle school social studies teacher Jamal Washington recommended giving teachers the opportunity to observe strong examples of quality interactions implementation in a peer's classroom and then trying to emulate the peer's instructional practice. When elaborating upon this idea, Mr. Washington remarked:

> Maybe we had core teachers that were creating the quality interaction lessons for different units. And then after we have a team that creates lessons, then from there giving the lessons, and then giving each other feedback on how well the lessons went. But at least just having a group of people that you can work with to help create the lessons according to the quality interaction format. (J. Washington, personal communication, Dec. 8, 2022)

Mr. Washington's idea includes a year-long process of collaborative lesson planning, watching demonstration lessons that model those lesson plans, and then reflecting upon the quality interactions implementation from the demonstration lesson. His idea moves beyond simply watching a video and includes a structure for ongoing collaboration, reflection, and support.

Other participants shared Mr. Washington's perspective that collaboration can support teachers with implementing ideas from the quality interactions workshop they have attended. When asked what

supported their implementation of the quality interactions professional learning, ten respondents wrote about the importance of collaboration. Many commented about how collaboration with colleagues at their schools had helped them to implement what they had learned. Meanwhile, other respondents were unclear about whether they had already collaborated with colleagues, but they indicated that they thought collaboration would be beneficial. David Buckley, a middle school special education teacher, mentioned that a school-wide focus on student interaction has helped him to implement quality interactions in his classroom. He noted:

> I guess the party line at my school supports this sort of thing− where they want us to engage the students, especially in the Special Ed setting, and especially in the ELL[9] setting. So that infrastructure is kind of already there; that expectation is already there. So, this kind of plays well into that. There's a support system at my school that embraces strategies like this, where you're getting kids to interact with each other. (D. Buckley, personal communication, Nov. 16, 2022)

Although Mr. Buckley does not elaborate on details of the school-wide focus, he is referring to a support network that exists at his school− one in which there is purposeful emphasis school-wide on the implementation of a particular topic. This connects to the idea that teachers are more likely to implement their professional learning when the school is intentional about providing job-embedded support for the transfer from professional learning to instructional practice (Clement & Vandenberghe, 2001). Furthermore, Mr. Buckley's reference to his school-wide support system links to research about the benefit of school-based administrators actively supporting teachers' implementation of professional learning (Clement & Vandenberghe, 2001; Hargreaves, 2000; Herrington et al., 2009). Other literature provides more additional endorsement for the positive impact of school-based collaboration on teachers' implementation of professional learning (Clement & Vandenberghe, 2001; Drago-Severson,

[9] English language learner

2008; Herrington et al., 2009; Klein & Riordan, 2009; Molle, 2021; Moon, 2001; Penner-Williams et al., 2017). Although there was variation in participants' ideas about the type of follow-up that would be helpful, there was consistent agreement about the need for follow-up itself.

Finding 4: Teachers' Beliefs Might Support and Hinder the Transfer of Their Professional Learning to Classroom Instruction

Changing Beliefs

Even if teachers report they have not implemented the quality interactions professional learning much, sometimes teachers report that the professional learning still influences their beliefs. High school science teacher Jenny Lambert, for example, commented:

> I'm not sure I've applied any directly… But I do have it in my mind of trying to get them to interact… I feel like I try to be more conscious about that… But when I do think about trying to get them to speak, I also try to think about getting them to listen and make it active between the kids, or between them and myself. (J. Lambert, personal communication, Nov. 15, 2022)

In this interview excerpt, Ms. Lambert describes that her thinking has changed, even if she has not used specific structures or recommendations from the quality interactions professional learning. She is more aware of the needs of English learners and is more intentional about providing students with opportunities to speak in class. In this way, the quality interactions professional learning has affected her thinking as she plans and teaches lessons. Extant research points to the benefit of changing teachers' beliefs, which can cause teachers to be more aware of their students' needs and to be more receptive to the topic of the professional learning eventually (Chang-Bacon, 2020; Riordan et al., 2019). Changes in belief, such as what Ms. Lambert described, can be a driver of future implementation of professional learning.

The Quality Interactions Professional Learning Reinforced Teachers' Existing Ideas and Practices

In the survey question about what supported teachers' implementation, many participants happened to mention that the quality interactions professional learning aligned well with their existing ideas and practices. Out of 64 people responding to the survey question about what aided their implementation, there were 13 survey comments referencing the reinforcement of what teachers already know and do. Respondents commented that they had previously learned about the concept of quality interactions or that the professional learning connected with ideas or practices they already had. During an interview, middle school special education teacher David Buckley remarked:

> I realized that I had also been kind of employing a lot of these things already. It just hadn't been codified in my mind by anybody as much as it was in that training session. I guess the big takeaway was that this concept wasn't new to me, but it made me realize that it is a valid strategy to use. (D. Buckley, personal communication, Nov. 16, 2022)

In his comment, Mr. Buckley refers to his familiarity with the content of the quality interactions workshop. He indicates that he feels he has already been implementing some of the ideas; attending the workshop helped him realize that he was already using worthwhile practices with students and that he should continue to employ those practices. Another interviewee, middle school math teacher Sally Kennedy, also mentioned that the ideas from the professional learning were not brand new to her. She stated:

> Like with any training, things are… cyclic, and it'll sound like the flavor of the month. But when you get down to the root of it, the concept stays very similar. But the reminders are good, and the rephrasing of it is helpful, and it brings it to the forefront. It brings it to question in your mind. Am I doing this? Am I still continuing to do this best practice? (S. Kennedy, personal communication, Dec. 5, 2022)

Ms. Kennedy articulates that the concepts and ideas in teachers' professional learning tend to repeat; when someone has been teaching long enough, it is possible to remember the last time the same topic was the focus for professional learning. Although she does not think the concepts from the quality interactions professional learning are novel, she does find it valuable to have a reminder that she should be implementing the ideas. Based on responses from participants, it appears that refreshing teachers' memory and reminding them of the skills and knowledge they already have can encourage implementation. When teachers are able to make connections from their professional learning to what they already know and do, the likelihood of classroom implementation is higher.

The Influence of Motivation

When teachers are motivated to implement their professional learning, they are more likely to do so. Multiple survey respondents indicated that having a positive attitude about their professional learning and feeling motivated to use what they had learned in the classroom helped them to implement the ideas. As middle school English language arts teacher Elijah Miller said:

> One of the harder things for a teacher is to be intentional to make the decision that− hey, this is what I'm going to do. And if they don't do that, then there's probably a pretty decent chance that they're not going to be able to use that when that could have been a really great thing to be able to use, for whatever it is that they were about to do in class. (E. Miller, personal communication, Nov. 30, 2022)

Mr. Miller comments upon the importance of teachers wanting to implement their professional learning− that it is a conscious decision they must make. He reasons that, even if the ideas from professional learning are valuable, teachers will not implement them in their classrooms unless they are motivated to do so. For implementation of professional learning to occur, teachers need to want to be doing it (Bucznyski & Hansen, 2010, as cited in Darling-Hammond et al., 2017).

Something that motivates teachers to implement their professional learning is grasping why the ideas are important. This connects with the desire that adults have to understand why they should know something (Knowles & Associates, 1984, as cited in Rohlwing & Spelman, 2014). They want to know the reasoning behind the ideas from the professional learning (Kennedy, 2016, as cited in Parkhouse et al., 2019) and feel motivated when the believe the ideas will be beneficial for students (Guskey, 2011; Guskey, 2021; Knight, 2021; Loucks-Horsley et al., 2010, as cited in Wilde, 2010). Just as published literature points out teachers' need to understand why new ideas are helpful for their students, CPS teachers also reinforced this point. Eight survey respondents reported that understanding why the quality interactions professional learning was important ended up supporting their classroom implementation. When teachers understand why their professional learning is important and are motivated and intentional about bringing the ideas to their classrooms, the transfer from professional learning to instructional practice is more likely to occur.

Teachers Overgeneralize the Quality Interactions Content

A topic that emerged from the data is that teachers perceive the content of the quality interactions professional learning to be common sense and, in general, good for all students, particularly English learners. While this might seem like a positive outcome, the belief that implementing the quality interactions professional learning does not require specific skills or strategies to facilitate discourse can hinder teachers' implementation. As previously mentioned, middle school math teacher Sally Kennedy spoke about open-ended questions when discussing how she has implemented the quality interactions professional learning. She stated, "open-ended questions are, in my mind, best practice. So, it seems like that's what it should be anyway. So that shouldn't be something that you're struggling to implement. It should be something that's just basically what you do" (S. Kennedy, personal communication, Dec. 5, 2022). Ms. Kennedy's belief that open-ended questions are so basic that it is not difficult to use them effectively, and perhaps that they do not require intentionality to implement, could be an explanation

for why she only asked one open-ended question during her observed lessons. Other research also points to teachers' belief that instructional practices designed to meet the needs of English learners are just examples of good teaching that do not require training to implement (de Jong & Harper, 2005; Harper & de Jong, 2009).

When asked what an observer might see or hear in a classroom to know if the teacher is implementing the quality interactions professional learning, survey respondents suggested a wide variety of ideas. Some of their ideas seemed largely unrelated to the topic of student-to-student discourse, such as the following examples: including warm-ups in lessons, displaying a vocabulary word wall in the classroom, using visuals, providing students with modified texts, chunking the material, posting language objectives in the classroom, and motivating students by saying "good job." The respondents offered these ideas, many of which can be considered beneficial for English learners, as meaning that quality interactions are occurring. The teachers might be misinterpreting the term *quality interactions* as meaning teaching practices that are generally advantageous for English learners.

Middle school special education teacher David Buckley also overgeneralized anything that might be helpful for English learners as evidence that he was implementing the quality interactions professional learning. In his interview, Mr. Buckley discussed how he implemented the quality interactions professional learning by teaching his students the meaning of prefixes like centi- and kilo- during a lesson on converting metric units (D. Buckley, personal communication, Nov. 16, 2022). According to Mr. Buckley's comment, it is important to teach English learners vocabulary; therefore, he believes he was implementing the quality interactions professional learning because he was addressing his students' needs.

Overgeneralizing ideas about quality interactions in this way can influence classroom implementation. When teachers perceive the quality interactions professional learning as general ideas that are helpful for English learners, rather than a narrower, purposeful focus on academic discourse,

they overlook the main goals of the professional learning. They tend to include what is already within their instructional practice, making use of their preconceived ideas about what is appropriate instruction for English learners, and think that they are implementing the quality interactions professional learning. The belief that using any instructional practice that is beneficial for English learners is evidence of implementing the quality interactions professional learning can lead to a lower likelihood that teachers will implement ideas that are related to quality interactions.

Belief That Quality Interactions Professional Learning Does Not Align With Certain Instruction

The belief that quality interactions do not align well with all content areas and formats (i.e., virtual v. in-person) of instruction can influence teachers' implementation of their professional learning. Some teachers believe their content area is so specialized that their professional learning is not relevant to what they teach (Bacon, 2020; Klein & Riordan, 2009). Furthermore, teachers find it difficult to implement professional learning across content areas when the examples are not explicitly linked to their particular subject matter (Bacon, 2020; Molle, 2021). Survey data supports these ideas; While responding to the survey, five CPS teachers (one science teacher, two math teachers, and two special educators who teach math content) commented that the idea of quality interactions does not fit well with their subject matter. Middle school special education teacher David Buckley provided insight about this belief when he relayed:

> The metric conversions involve simple math where you're moving decimal points. So, there's not so much of a demand for a quality interaction or a class-wide conversation for that. They just have to learn that math skill. It's a task that has to be repeated. (D. Buckley, personal communication, Nov. 16, 2022)

Here, Mr. Buckley is discussing his belief that quality interactions are not relevant to his lesson about converting metric units. He reasons that there is no need for discussion about concrete skills such as calculations because students learn the skill better through repetition. His focus is solely on his

perception of the best way for students to develop a content-related skill; he does not mention other factors that might influence classroom instruction, including his students' language development needs. Like some of his colleagues who also teach math and science, Mr. Buckley believes that the content he teaches does not align with the concepts from the quality interactions professional learning.

Other teachers feel that the relevancy of the ideas from the quality interactions professional learning depends on what they are teaching in a specific lesson. For example, middle school English language arts teacher Elijah Miller stated:

> I think that reading really lends itself to the quality interactions, while other types of learning That go on in an English class, like teaching grammar… or when the kids are doing fundamental writing tasks… I feel that it's not as productive to use the quality interactions there. (E. Miller, personal communication, Nov. 30, 2022)

Mr. Miller has reported to be a strong supporter of the ideas from the quality interactions professional learning, yet he indicates that implementing those ideas would not be appropriate for every lesson. While he recognizes the value in engaging students in quality interactions, he does not feel that academic discourse is a useful way to teach grammar or writing skills. Mr. Miller continued to explain:

> But in this particular case, the discussion really was, "Let's get the right answer, and then let's write this down." And so, the actual trying to accomplish all of those different goals that are in the quality interactions is not a part of what this conversation was like. The goal was, "Let's get the right answer. Let's use the model and be able to do this for ourselves." (E. Miller, personal communication, Nov. 30, 2022)

In Mr. Miller's elaboration, he mentions that his goal for a lesson determines whether the ideas from the quality interactions professional learning are relevant. For the particular lesson that Mr. Miller is referencing, his goal was for students to write a paragraph containing a topic sentence, evidence, and a closing sentence. He is asserting that when a task requires students to provide a specific response or use

a rigid process, it is not appropriate for the students to engage in academic discourse. Thus, Mr. Buckley and Mr. Miller agree that the utility of the quality interactions professional learning depends on the topic of the lesson.

Another topic that appears in the data is that the format of instruction affects whether teachers implement their quality interactions professional learning. The workshops about quality interactions occurred virtually over Microsoft Teams, and school-based collaborative lesson planning and classroom observations might have taken place virtually or in-person. Although CPS teachers used to teach their students virtually due to the COVID-19 pandemic, the vast majority of them now teach all of their students in-person. High school science teacher Jenny Lambert explained about her quality interactions professional learning:

> I took it virtually. I feel like it's apples and oranges. I almost wish I could take it again with strategies on how to do it in person. Because it is a different type of interaction in the classroom than it is online. (J. Lambert, personal communication, Nov. 15, 2022)

With this comment, Ms. Lambert is expressing her perspective that the ideas from a virtual workshop are not as relevant to in-person classroom instruction. The implication is that it is challenging for teachers to implement professional learning that took place virtually in an in-person classroom setting because of this perceived irrelevance. Even though the quality interactions workshops took place virtually, they included discussion about what the structures might look like during in-person instruction and how to adapt and differentiate the ideas depending on the needs of the students. Despite these discussions, it seems that some teachers might still view the quality interactions professional learning as being related to virtual instruction. When there is a mismatch between the format of the professional learning and the format of teachers' current classroom instruction, the belief that the professional learning is irrelevant might affect teachers' implementation.

Just as there are teachers who believe the quality interactions professional learning does not align with the content they teach, there are also teachers who believe the ideas from the professional learning do not align with the format of their classroom. When teachers have difficulty seeing how the quality interactions professional learning can apply to a scenario that is different from the specific examples from the workshop they attended, either in the content or the format of the examples, they experience challenges with implementation.

Finding 5: The Demands of Teaching Can Hinder Teachers' Transfer of Professional Learning to Classroom Instruction

Too Much To Do, Not Enough Time

It takes time for teachers to implement professional learning (Darling-Hammond et al., 2017; Herrington et al., 2009; Klein & Riordan, 2009; Tooley & Connally, 2016, as cited in Darling-Hammond et al., 2017), and the scarcity of time can be a barrier to effective implementation (Herrington et al., 2009; Klein & Riordan, 2009). A prevalent theme in teachers' survey responses was that their plates were full, and a lack of time prevented them from being able to implement the quality interactions professional learning. In fact, not having enough time was, by far, the most common response to the question of what hinders teachers' implementation of the quality interactions professional learning. Twenty-one out of 61 respondents (34.4%) mentioned that time was an issue. They explained that they did not have enough time to plan lessons and activities that promoted quality interactions. The teachers also indicated that they had challenges with implementing the professional learning because they did not have time to collaborate, either with a co-teacher or with English learner teachers in their school buildings. Additionally, survey respondents mentioned that including academic discourse in their instruction takes a significant amount of class time, which is a problem when they feel they do not have enough time to teach everything in their curricula.

In addition to identifying a lack of time as a challenge in implementing their professional learning, survey respondents also mentioned the idea that they had more workplace responsibilities than they could manage. Teachers explained that they were "overwhelmed" by the demands of their jobs and that it was too stressful to consider doing anything extra, such as implementing the quality interactions professional learning. Respondents referenced that CPS had too many new initiatives and that the U.S. Department of Justice and the department of education for the state in which CPS is located required that teachers participate in too much professional learning. With so many different topics required for professional learning, they explained, it became difficult to remember all of the ideas, let alone implement them in classrooms.

Survey respondents of all content areas and representing all three size English learner populations commented about their limited time and full plates. There were no noticeable differences or patterns in responses based on teachers' content areas or on the size of the English learner population at their schools. Although survey respondents seemed uniformly overwhelmed by the shortage of time, none of the interview participants mentioned this issue. It is important to note that the teachers who participated in interviews chose to volunteer their time to do so; thus, they might not represent typical CPS teachers in this regard. Two participants did mention, however, that they could not remember the quality interactions workshops very well because they had attended too many professional learning sessions in the past year.

Students' Needs Can Hinder Implementation

Another demand of teaching that can hinder implementation of professional learning is the needs of the students. Seven survey respondents, five of whom were special education teachers, mentioned that student needs can be a challenge- both the level of need of individual students as well as the diversity of needs in a classroom. For some respondents, teaching students who need a high amount of support in the classroom can lead to challenges in the implementation of professional

learning. Similarly, when there is a wide variety of needs in the classroom (e.g., social-emotional, behavior, academic, linguistic), respondents reported needing to focus so much on meeting the differing needs of the students that implementing the quality interactions professional learning becomes difficult.

A few participants touched upon the role of students' emotional needs in whether teachers implement the quality interactions professional learning. The participants indicated that students' comfort with engaging in interactions with their classmates was a significant factor. For example, when discussing what can hinder teachers' implementation of the quality interactions professional learning, middle school special education teacher David Buckley explained:

> When the students are comfortable with each other, and their peer relationships are solid, and there's not any bullying or anybody that tries to make you feel uncomfortable or inhibited, then you, the student, are going to be more comfortable interacting. The chemistry of the class can be a big factor. (D. Buckley, personal communication, Nov. 16, 2022)

Mr. Buckley references the importance of the classroom climate in motivating students to engage in conversations with each other. He suggests that it is easier for quality interactions to occur when students support each other, rather than discourage peers from sharing their ideas. This means that a negative classroom climate can influence students' motivation to interact with each other and can hinder teachers' implementation of the quality interactions professional learning.

Summary

This chapter presented five findings that emerged from the survey, classroom observation, and interview data. First, teachers report varying levels of implementation of the quality interactions professional learning. Second, the level of implementation teachers report does not necessarily align with the level of implementation observed during classroom instruction. Third, the design of teachers' professional learning appears related to classroom implementation. Fourth, teachers' beliefs might support and hinder the transfer of their professional learning to classroom instruction. Fifth, the

demands of teaching can hinder teachers' transfer of professional learning to classroom instruction. The next chapter will provide recommendations to CPS for how to support secondary core content teachers with implementing the quality interactions professional learning.

Chapter 5: Recommendations

This chapter provides recommendations to CPS based on the findings of a mixed methods research study on the topic of teachers' implementation of professional learning about facilitating quality interactions for English learners. In CPS, quality interactions was a key topic for professional learning during the 2020-2021 and 2021-2022 school years due to the findings from the CPS English Learner Program evaluation (WestEd, 2019) and the requirements of the Department of Justice settlement agreement (United States Department of Justice, 2019). Through surveys, classroom observations, and interviews, the research study investigated the following questions:

- To what extent are CPS secondary core content teachers transferring professional learning about quality interactions to classroom instruction?
- What has facilitated or hindered CPS secondary core content teachers' transfer of professional learning about quality interactions to their classroom instruction?

Based on findings from the research study, there are three main recommendations (see Appendix P); the purpose of these recommendations is to provide CPS with ways to support secondary teachers with implementing their quality interactions professional learning during classroom instruction.

Recommendation 1: Establish a Clear Professional Learning Focus

Reduce the Quantity of Professional Learning Topics

Establishing a clear focus for professional learning in CPS can increase the likelihood that teachers will be able to apply their professional learning to their classroom instruction. According to survey data, CPS secondary core content teachers feel overwhelmed by the number of new initiatives within the school district. When asked what hindered their implementation of the quality interactions professional learning, numerous teachers indicated that there are too many initiatives and too many topics for professional learning. They expressed that it is difficult to remember the ideas from the

various professional learning sessions they have attended because there have been too many[10]; all of their professional learning blended together, and they could not remember specific ideas from the quality interactions professional learning. If teachers cannot remember the concepts from their professional learning, then it becomes difficult for them to bring the ideas to their classroom instruction.

To support teachers with transferring the ideas from the quality interactions professional learning to their classroom instruction, CPS should reduce the quantity of initiatives and professional learning topics, which aligns with the recommendations from the English Learner Program evaluation (WestEd, 2019). Instead, CPS should have a coordinated, sustained effort to focus on a minimal number of topics, including professional learning about quality interactions. Reducing the number of initiatives and professional learning topics to as few as possible will narrow the district's focus and could prevent teachers from feeling like there are too many ideas to implement simultaneously. Furthermore, selecting fewer professional learning topics, ideally only one, allows for teachers to spend a longer duration engaging with a topic, which is more likely to be effective (Darling-Hammond et al., 2017). Rather than trying to implement many topics to a small degree, teachers will be able to focus their time and energy on implementing a few ideas well. CPS should give teachers time to experiment with quality interactions and become more skilled at facilitating them before adding other professional learning topics to their plate. *Action Step: At the central office level, coordinate and prioritize professional learning topics so that the quantity can be reduced to a manageable level.*

Clarify the Goal of the Quality Interactions Professional Learning

If CPS is clear on its goal for the quality interactions professional learning, that will help teachers focus their efforts on the key ideas. Data collected during this research study suggests that CPS teachers have difficulty differentiating between instructional practices that specifically promote quality

[10] During the 3 years of the settlement agreement, from school year 2019-2020 to 2021-2022, the CPS English Language Development Office offered approximately 18 different professional learning options that secondary core content teachers could choose from to complete their sheltered content instruction training requirement.

interactions from pedagogy that is, in general, supportive of English learners. According to survey and interview data, CPS teachers overgeneralize the purpose of the quality interactions professional learning. The teachers perceive that anything they might be doing to support English learners, such as providing adapted texts or teaching vocabulary, is evidence that they are implementing the quality interactions professional learning. Some CPS teachers equate the concept of quality interactions with common sense best practice that is generally good for all students, especially English learners. These teachers connect quality interactions with their preconceived notions of what is considered effective instruction, which could correspond with the belief that it does not require a special skillset to facilitate quality interactions (de Jong & Harper, 2005; Harper & de Jong, 2009). When teachers believe that the concept of quality interactions is an example of basic, general instruction, they might not put effort into facilitating quality interactions in their classrooms, leading to a lack of implementation.

Furthermore, CPS teachers tended to implement aspects of the quality interactions professional learning that were likely already within their comfort zone, such as asking open-ended questions, but did not often implement ideas that were more uniquely tied to student discourse, such as specific structures for student interaction or giving students feedback about their interactions. During classroom observations, the implementation that was evident, predominantly the teachers' use of open-ended questions, rarely resulted in students speaking to each other. When student interaction did occur, it was optional, not required. Students could have completed their assignments without speaking to classmates. It seemed the classroom instruction did not prioritize student discourse. Similarly, the CPS English Learner Program evaluation noted that any quality interactions that did occur in CPS classrooms seemed to occur by happenstance and not by the design of the teacher's instructional practices (WestEd, 2019). If quality interactions are to occur in classrooms, CPS teachers need to be more intentional about how they plan for and facilitate these conversations. The intent of the quality interactions professional learning was for teachers to purposely design their instruction so that students

must engage in discourse with each other about the content they are learning, yet that goal seems to be getting overlooked. *Action Step: Clarify the goal of the quality interactions professional learning, and be consistent when communicating that goal to teachers.*

Clarify the Rationale Behind the Quality Interactions Professional Learning

CPS should provide teachers with a clear rationale for the importance of the quality interactions professional learning. Teachers want to know why something is important and worth knowing (Knowles & Associates, 1984, as cited in Rohlwing & Spelman, 2014); they want to understand the rationale behind their professional learning (Kennedy, 2016, as cited in Parkhouse et al., 2019), and they are more motivated to engage in professional learning when they think it will benefit their students (Guskey, 2011; Guskey, 2021; Knight, 2021; Loucks-Horsley et al., 2010, as cited in Wilde, 2010). CPS survey respondents echoed these ideas when they indicated that understanding why quality interactions are important supported their reported transfer from professional learning to their instructional practice. Therefore, it would be helpful for CPS to continue to communicate a clear explanation of why quality interactions are important. *Action Step: Consistently communicate with teachers about the rationale behind the quality interactions professional learning.*

Simply expressing that quality interactions are important might not be enough to encourage all CPS teachers to implement the quality interactions professional learning. An additional step in clarifying the rationale of the quality interactions professional learning is making teachers aware of the amount of student discourse in their own classrooms. Although many CPS teachers reported to be implementing the quality interactions professional learning, there was scant evidence of such implementation during classroom observations (see Table 11). As part of the survey, teachers suggested criteria that would, from their perspective, indicate that quality interactions are occurring in a classroom. Classroom observations documented some of these criteria taking place in the classroom (see Table 12), yet they did not lead to quality interactions occurring among students. For example, just because students were

seated in groups of desks did not mean that they engaged with each other in discourse about the content of their courses.

Similarly, when comparing CPS teachers' interviews with their classroom observations, there was also a discrepancy between teachers' perception of their instruction and the data collected during observations. One CPS teacher mentioned in her interview that she asked numerous open-ended questions in the observed lessons (S. Kennedy, personal communication, Nov. 9, 2022), yet she only asked one open-ended question during 1.5 hours of classroom instruction. In addition, another participant commented during his interview that there were many examples of quality interactions in one of his observed classes (D. Buckley, personal communication, Nov. 16, 2022). In spite of this assertion, his students never spoke to each other during the lesson. Based on the mismatch between classroom observations and data from surveys and interviews, it seems that CPS teachers might not always perceive their own teaching accurately.

Interestingly, some CPS teachers believe that there are no barriers impeding their implementation of the quality interactions professional learning. In fact, approximately 18% of teachers who responded to the survey question about what hindered their implementation indicated that they experienced no barriers whatsoever. Some interviewees also shared this sentiment about the lack of barriers getting in the way of implementation, yet the teachers' instructional practices during observations did not reflect much implementation of the quality interactions professional learning. A possible explanation is that teachers might not be aware that quality interactions are not occurring in their classrooms. Widespread and transparent data collection about the amount of student discourse in classrooms could encourage teachers' awareness of this topic. A simple way to collect this data would be to use a stopwatch to time the number of minutes that students spend discussing academic content with each other. Teachers could collect this data for a partner when conducting peer visits, or administrators could collect the data during classroom observations. Perhaps seeing concrete data

about the how often student discourse occurs in their classrooms might cause CPS teachers to think more critically about the rationale behind the quality interactions professional learning. *Action Step: Provide teachers with data about student discourse in their classrooms so they recognize the frequency of quality interactions.*

Collaboration between the English Language Development Office and content area offices could also support the communication of a clear rationale for the quality interactions professional learning. In this research study, some CPS teachers, particularly math teachers, expressed that quality interactions do not align well with the content they teach. The teachers indicated that when there is a clear right answer to a question, they do not believe that facilitating quality interactions is a useful way to approach instruction. Other research echoes the sentiment that some teachers find their professional learning to be irrelevant to the subject matter they teach (Bacon, 2020; Klein & Riordan, 2009) and have difficulty implementing the professional learning when the examples provided are not explicitly related to their content area (Bacon, 2020; Molle, 2021). With this in mind, CPS teachers might be more receptive to communication coming from their content area offices rather than from the English Language Development Office. Collaboration between the CPS English Language Development Office and content area offices, particularly the math office, could produce messaging about why academic discourse is important in all content areas. *Action Step: Support collaboration between the English Language Development Office and content offices to ensure that messaging about the importance of implementing quality interactions also comes from content-specific sources.*

Recommendation 2: Offer Continued Professional Learning

Provide Content-Specific Professional Learning About Quality Interactions for Math Teachers

As previously mentioned, some CPS math teachers do not find the quality interactions professional learning relevant to their content area. In addition to holding this perception, survey data indicate that, compared to teachers of other core content areas, math teachers characterize their

implementation of the quality interactions professional learning at a lower level (see Table 4). CPS math teachers also reported being less likely to implement information gap, opinion continuum, and role play structures with students, compared to teachers of other content areas (see Table 4). Since math teachers stand out as implementing the quality interactions professional learning to a lesser extent, it would be helpful for CPS to provide targeted professional learning for math teachers, in collaboration with the Mathematics Office, using math-specific examples so math teachers are more likely to view quality interactions as relevant to their context. Although U.S. math teachers might tend to focus on the procedure of calculating correct answers (Ball, 1991, as cited in Ma, 2020), the National Council for Teachers of Mathematics advocates for including math discourse as a regular part of instruction (Leinwand et al., 2014). Helping CPS math teachers recognize the relevance of quality interactions to their classroom instruction would align with best practice in the field of math education.

An appropriate time for such professional learning could be during county-wide secondary math teacher meetings, which could provide an opportunity for math teachers to examine how the concept of quality interactions connects with their content areas. For example, teachers could discuss ways to turn content that seems to have only clear-cut answers into opportunities for more open-ended discussion topics, such as students explaining their mathematical thinking. This would connect well with the emphasis the Mathematics Office is placing on math discourse this school year. Connecting the quality interactions professional learning with the concept of math discourse, through collaborative approaches to professional learning, could help math teachers realize that the concept of quality interactions is not separate from what the Mathematics Office is encouraging teachers to implement already. *Action Step: Provide content-specific professional learning for math teachers, with collaboration between the Mathematics Office and the English Language Development Office, to boost math teachers' facilitation of student discourse during classroom instruction.*

Coordinate Sustained Professional Learning

CPS should continue to offer teachers professional learning about quality interactions. Feedback from survey respondents indicates that they found the content of the quality interactions workshops helpful for aiding their implementation of the ideas. It is important to note that the researcher in this study was also the designer and facilitator of the quality interactions workshops, so it is possible that this dual role influenced teachers' survey responses. Assuming that teachers' responses were genuine, however, suggests that the quality interactions workshops were worthwhile. Because teachers found the workshops beneficial, CPS should continue to provide quality interactions workshops. *Action Step: Continue to provide existing quality interactions workshops for teachers who are not familiar with the concept.*

Through surveys and interviews, some CPS teachers expressed that veteran teachers do not need additional professional learning, but they might need support with implementing the ideas they already know. Interestingly, 100% of interviewees mentioned the need for follow-up after attending quality interactions workshops. Other research studies have also suggested the importance of follow-up on teachers implementing ideas from professional learning workshops they have attended (Darling-Hammond et al., 2017; Guskey, 2021; Hawley & Valli, 1999; Ingvarson et al., 2005, as cited in Parsons et al., 2019; Knight, 2021; Moon, 2001; Penner-Williams et al., 2017; Renyi, 1996; Speck & Knipe, 2001, as cited in Teemant, 2010; Wilde, 2010). In support of the idea of follow-up after professional learning workshops, 100% of CPS survey respondents who participated in school-based follow-up indicated they changed their instructional practice after participating in quality interactions professional learning. CPS should provide follow-up to all teachers who have participated in quality interactions professional learning. The follow-up should include opportunities for teachers to discuss differentiating the ideas from the quality interactions professional learning workshops, as CPS teachers indicated they found it challenging to implement the ideas in classrooms that had a variety of student needs and abilities. This

follow-up should be sustained over time to increase its efficacy (Darling-Hammond et al., 2017; Klein & Riordan, 2009), which is consistent with recommendations from the CPS English Learner Program evaluation (WestEd, 2019). *Action Step: Collaborate with representatives from content area offices, administrators, the professional learning office, and teachers to develop a plan for sustained, district-wide follow up about facilitating quality interactions in classroom instruction.*

CPS teachers commented upon the type of follow-up they would find helpful. One participant recommended that CPS provide teachers with a repository of on-demand videos of teachers facilitating quality interactions in their classrooms. He thought this format for follow-up would appeal to veteran teachers who feel that they have learned about these concepts before, either through formal training or through their own experiences with teaching (E. Miller, personal communication, Nov. 30, 2022). Another participant advocated for CPS to establish a cohort of teachers who would spend a few months working together to develop content-specific lesson plans designed to facilitate quality interactions among students (J. Washington, personal communication, Dec. 8, 2022). Although the participant did not specify whether the teachers in the cohort should teach the same content area or a variety of content areas, either approach could be beneficial. Members of the cohort would serve as a support network for each other as they implement quality interactions in their own classrooms. These lesson plans they develop would be available to teachers throughout CPS to serve as examples because survey respondents indicated that having access to ready-made materials and examples in their specific content can support their implementation. Both the collection of videos and the example lesson plans would provide follow-up support to guide the transfer of professional learning to instructional practice. *Action Steps: Make video recordings of lessons employing quality interactions, and share these videos with CPS teachers. Organize a cohort of teachers to meet periodically to discuss quality interactions, develop sample lessons and materials, and try out the lessons in their classrooms. Use these lesson plans and videos as resources to encourage other teachers to try the ideas in their own instruction.*

Recommendation 3: Provide Structural Support

Providing school-based structural support would likely be beneficial for teachers' implementation of the quality interactions professional learning. According to survey data, a common theme was that CPS teachers feel they do not have time, either during instruction or for lesson planning, to implement their professional learning. Teachers commented that it takes up class time to try new ideas with students; respondents also indicated that they did not have enough time to collaborate with colleagues, including English learner teachers, about lessons that involved quality interactions. When asked what hindered their implementation of the quality interactions professional learning, time was by far the most common response, with 34.4% of respondents indicating that it was an issue. Other research confirms the importance of time on teachers' implementation of their professional learning (Darling-Hammond et al., 2017; Herrington et al., 2009; Klein & Riordan, 2009; Tooley & Connally, 2016, as cited in Darling-Hammond et al., 2017). With a lack of time being such a concern for teachers, schools' intentional decisions about the structure of teachers' roles and responsibilities could support the implementation of quality interactions professional learning.

It would be beneficial for school-based administrators to be conscientious and deliberate about providing teachers with job-embedded structural support that can aid their implementation of professional learning (Clement & Vandenberghe, 2001; Hargreaves, 2000; Herrington et al., 2009). School-based collaboration can encourage teachers' implementation of professional learning (Clement & Vandenberghe, 2001; Drago-Severson, 2008; Herrington et al., 2009; Klein & Riordan, 2009; Molle, 2021; Moon, 2001; Penner-Williams et al., 2017), so administrators could structure teachers' schedules to prioritize common planning time with colleagues. Another possibility is for administrators to replace existing meetings with opportunities for teachers to discuss ways to facilitate quality interactions among students. Schools could also coordinate peer visits to classrooms that frequently feature quality interactions. If administrators commit to providing a structure for ongoing school-based support of the

quality interactions professional learning, it will be easier for teachers to follow through in their classroom instruction. *Action Step: Work with school-based administrators about ways to provide ongoing, structural support for teachers' implementation of their professional learning.*

Limitations and Delimitations

There are certain considerations upon which CPS will want to reflect when determining the approach to these recommendations. First, these recommendations are based on the assumption that CPS wants to prioritize implementation of the quality interactions professional learning. There are many worthwhile topics for professional learning that the district could emphasize, and quality interactions is just one of them. With the variety of Federal and state requirements, in addition to various other initiatives that CPS might deem important, it is unwise to presume that facilitating quality interactions is the district's primary goal. Second, these recommendations rely on CPS having a workplace culture that enables the ability to coordinate and standardize across and within schools. The recommendations will be more difficult to implement if each school, each administrator, each team, and each teacher chooses to disregard attempts at coordinated efforts. Third, the quality interactions professional learning took place during a pandemic, and it is unclear how the context of the public health situation and of the nature of teaching during that time period might have affected the findings. Finally, this study only investigated secondary core content teachers' implementation of the quality interactions professional learning, so further study will be necessary to determine whether these recommendations would be appropriate for elementary teachers or for secondary teachers who do not teach English language arts, math, science, or social studies.

Summary

Each of the recommendations in this chapter is designed to support teachers' implementation of the quality interactions professional learning. The recommendations seek to address the identified problem of infrequent occurrences of quality interactions in CPS classrooms. This benefits CPS because

implementation of the quality interactions professional learning is likely to increase the chances that students will be engaging in conversations about their academic coursework, which is important for language development as well as content acquisition (Gibbons, 2015) and will have the potential to address gaps in educational opportunities for English learners. Supporting teachers' implementation of the quality interactions professional learning has the potential to influence the equity of classroom instruction and student learning in CPS.

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Appendix A

Research about a Continuum of Implementation

Table A1

Klein & Riordan's (2009) Six Stages of Implementation

Stage of Implementation	Description
No implementation	Teachers understood the training and thought it aligned with their beliefs, but they saw their content and teaching situations as so unique that the professional learning could not possibly apply to them.
Token implementation	Teachers use buzz words from the professional learning while they talk about it, but they do not actually implement anything.
Mistaken implementation	Teachers try to implement the idea, but their implementation is not effective due to a misunderstanding.
Direct implementation	Teachers copy exactly what they saw in the professional learning.
Adaptation level I/Tinkering	Teachers try to adapt the idea, but the adaptations are things that were presented in the professional learning. Adaptations are largely superficial.
Adaptation level II/Crafting and jiggering	Teachers make adaptations they have not seen before, which are based on the needs of their students.

Table A2

Knight's (2021) Five Stages of Implementation

Stage of Implementation	Description
Non-use	Teachers do not want to implement the professional learning or are not able to. Maybe they have not attended the professional learning.
Awareness	Teachers are not avoiding implementation, but they are not doing it either. Maybe they do not know how to go about it.
Mechanical	Teachers are trying to implement the professional learning, but it is not comfortable for them. They have to refer back to their training frequently.
Routine	Teachers are comfortable with the change. They have "false clarity," the idea that they understand what they are implementing, but they ideas are more complicated than they realize (Fullan, 2001, as cited in Knight, 2021). Teachers do not implement the ideas as effectively as they could.
Proficient	Teachers have a deep understanding of the ideas from the professional learning, and they can adapt the ideas as needed. Their implementation appears effortless but really reflects practice and effort they have put into the learning process.

Appendix B

Initial Correspondence for Observation/Interview Participants

Dear [*Insert Name Here*],

I am writing to request your participation in a research study related to professional learning that you have participated in about quality student-to-student interactions for English learners. The purpose of the research is to collect data that will provide insight into factors affecting teachers' implementation of professional learning. I am conducting this research for my capstone project (titled Secondary Content Teachers' Implementation of Professional Learning About Quality Interactions for English Learners), which is part of my doctoral program at the University of Virginia.

You have already been invited to participate in a survey for this research study. You have also been selected to participate in the classroom observation and interview portions of this research. This will involve two 45-minute classroom observations and a 45-minute interview this fall. You will not need to do anything to prepare for the observations other than to provide a copy of your teaching schedule. If you choose to participate in these stages of the research process, your data will be confidential. None of the data will be reported as connected with your name.

Your participation in this research is expected to take from 1 hour and 25 minutes to 5 hours of time, as there are optional aspects of the research process that you may choose to participate in if you would like. Those who complete the survey, the classroom observations, and the interview will be eligible to receive 5 points towards license recertification due to participation in an educational project.

If you have any questions about this research study, please feel free to email or call me using the contact information listed below.

Additional information about your rights as a research participant can be found here: https://research.virginia.edu/research-participants.

A consent form is attached to this email. Please upload your signed consent form here [include link] by [date] to indicate whether you are willing to participate in this research study. Participation in this research will have a meaningful impact on decisions that affect professional learning for teachers and instruction for English learners.

Sincerely,

Amy Sherman

Doctoral Candidate
University of Virginia

SIOP Coach & English Learner Early Childhood Specialist
CPS English Language Development Office

as6fu@virginia.edu
(###)###-####

IRB protocol #5134

Appendix C

Survey Questions

The purpose of this survey is to learn more about secondary core content teachers' implementation of professional learning about quality student-to-student interactions. All responses will be kept confidential, and responses will only be shared in aggregate. All perspectives are welcome in this survey.

Your participation in this survey is voluntary. Please read the consent form, which you can access here: [upload consent form]. If you have any questions about this study, please contact the researcher, Amy Sherman, using the contact information on the consent form. If you agree to participate in this research study, please continue to the next page of the survey.

This first section will ask questions about the Quality Interactions professional learning you have attended.

If you would like to refresh your memory, you are welcome to review the presentation slides for the 2-hour Quality Interactions workshop [link] and/or the Facilitating Quality Interactions series (parts 1, 2, and 3) [links] that you have attended.

1. **Which of the following types of professional learning have you participated in with CPS?** (*select at least one response)*
    - ☐ A 2-hour workshop titled Quality Interactions
    - ☐ A 3-part series (over 3 months) titled Facilitating Quality Interactions
    - ☐ School-based collaborative lesson planning about quality interactions with a professional learning community
    - ☐ School-based coaching and/or peer observations focusing on quality interactions

2. **When did you most recently participate in professional learning about Quality Interactions?** (*select one response*)
    - o Within the past month
    - o Within the past 2-3 months
    - o 4-6 months ago
    - o 7-12 months ago
    - o More than 12 months ago

The questions in the following section are about your implementation of the Quality Interactions professional learning.

3. **What level of change, if any, has the Quality Interactions professional learning caused in your instructional practice?** *(select one response)*
    - o Significant change
    - o Moderate change
    - o Minimal change
    - o No change

4. **Which of the following best describes your implementation of the Quality Interactions professional learning?** *(Select one response.)*

- ○ I have not implemented the Quality Interactions professional learning with my students.
- ○ I tried to implement the Quality Interactions professional learning with my students, but I don't think my implementation was like the examples from the professional learning.
- ○ I implemented the Quality Interactions professional learning with my students, and I referred back to the professional learning materials to try to replicate the examples.
- ○ I felt comfortable implementing the Quality Interactions professional learning with my students. What I did with my students was just like the example(s) from the professional learning even though I did not refer back to the session materials as a resource.
- ○ I implemented the Quality Interactions professional learning with my students. To do so, I made some adaptations that were discussed during the Quality Interactions professional learning.
- ○ I implemented the Quality Interactions professional learning with my students. To do so, I made some adaptations based on the needs of my particular students. I thought of these adaptations on my own, and they supported sustained academic discourse among students.

5. **How confident did you feel while implementing the ideas from the Quality Interactions professional learning?** *(select one response)*

1	2	3	4	5
not at all confident	*a little confident*	*somewhat confident*	*very confident*	*completely confident*

6. **Since participating in the professional learning about Quality Interactions, how often, if at all, have you included aspects from the professional learning into your classroom instruction?** *(select one response for each row)*

	Frequently	Sometimes	Seldom	Never
Open-ended questions	○	○	○	○
Prompts	○	○	○	○
Language of interaction	○	○	○	○
Feedback about interaction	○	○	○	○
Opinion continuum	○	○	○	○
Information gap	○	○	○	○
Role play	○	○	○	○

7. **What, if anything, supported your implementation of the Quality Interactions professional learning in your classroom instruction?**

8. **What, if anything, hindered your implementation of the Quality Interactions professional learning in your classroom instruction?**

9. **If you visit a classroom, what might you see the teacher doing or hear the teacher saying that lets you know the teacher is implementing the Quality Interactions professional learning?** *(Please type your answer in the space below.)*

The last section will ask some questions about your teaching position and your school site.

10. **What is the name of your school? _____**

11. **Which do you teach?** *(select at least one response)*

- ☐ English language arts
- ☐ Math
- ☐ Science
- ☐ Social studies

- ☐ Special education

12. Do you consider yourself to be bilingual or multilingual? If so, please indicate the languages you know proficiently.

- o No
- o Yes ____ *(type names of languages here)* _____

13. **Do you identify as any of the following?** *(Please mark all that apply.)*

- ☐ Asian and/or Asian American
- ☐ Black and/or African American
- ☐ Hispanic and/or Latinx
- ☐ Native American, Native Alaskan, and/or American Indian
- ☐ Native Hawaiian and/or Pacific Islander
- ☐ White and/or Caucasian
- ☐ Other ____ *(type your response here)* _____

14. How many years of teaching experience do you have, including the current school year? *(Please type a whole number.)*

_____

Your responses have been recorded. Thank you for sharing your thoughts and perspectives in this survey.

Appendix D

Survey Pilot Testing Protocol

Time required: approximately 1 hour

Participants: Establish a panel of approximately 4 to 7 people, including representation from the English Language Development Office, the Professional Learning Office, and hopefully at least two people who attended quality interactions professional learning who are not part of the target population.

Process:

1. Explain the purpose of the pilot testing. "*Thank you for agreeing to pilot test the survey. The purpose of the survey is to collect data about secondary core content teachers' implementation of their professional learning about engaging English learners in high-quality student-to-student discourse. Today I will be asking you to provide feedback on some questions to determine what changes should be made, if any, before administering the survey. Your responses or feedback will not be used for any purpose other than to improve the survey. Your expertise and perspective are extremely valuable in this process, and I thank you for the time you are spending here today*."
2. Have panel members complete the survey. Time how long it takes them to answer all of the questions.
3. Show panel members the feedback tool (see Table D1), and clarify for them that they will need to select at least one response for each question. Review the meaning of the response options.
    a. Unclear: The meaning of the question is unclear, confusing, or ambiguous.
    b. Double question: The question is asking about two different things at the same time. (For example, "What is your favorite color, and how many shirts do you own in that color?")
    c. Missing answer choice: The answer I would want to choose is not an option. Either an option needs to be added, or there needs to be an adjustment to the current answer choices that are listed.
    d. Wordy: The question is too long or too wordy.
    e. Adjust question order: The question appears to be in a location that is not ideal. It would be better to move the question to a different location in the survey.
    f. Other: Select this option if there is something you would recommend changing about the question that is not included in the previous headings. Please indicate the change you would recommend in the comments section.
    g. Comments: If you have selected "other," please provide comments explaining what should be improved about the question.
    h. Fine as is!: Select this option if you do not think the question needs to be changed.
4. Provide panel members time to read the questions and mark their feedback on the tool.

5. After all the panel members are done marking their feedback on the tool, discuss each question in sequential order. Ask panel members to discuss any questions that have marks in the white section. Take notes during the discussion.
6. Ask panel members about the method they believe the target audience would prefer for responding to the survey (such as internet, phone call, in-person). Also ask what they think would be the most effective way to encourage teachers to complete survey. What would their recommendation be for addressing non-response?
7. Prepare a summary of the panel members' feedback, and revise the survey as needed.

Table D1

Pilot Testing Feedback Tool

Directions: Please check as many headings as apply for each question. You must select at least one response for each question number. If you select "other," please provide an explanation in the comments section.								
Question #	**Unclear**	**Double question**	**Missing answer choice**	**Wordy**	**Adjust question order**	**Other (see comments)**	**Comments**	**Fine as is!**
1	☐	☐	☐	☐	☐	☐		☐
2	☐	☐	☐	☐	☐	☐		☐
3	☐	☐	☐	☐	☐	☐		☐
4	☐	☐	☐	☐	☐	☐		☐
5	☐	☐	☐	☐	☐	☐		☐
6	☐	☐	☐	☐	☐	☐		☐
7	☐	☐	☐	☐	☐	☐		☐
8	☐	☐	☐	☐	☐	☐		☐
9	☐	☐	☐	☐	☐	☐		☐
10	☐	☐	☐	☐	☐	☐		☐
11	☐	☐	☐	☐	☐	☐		☐
12	☐	☐	☐	☐	☐	☐		☐

13	□	□	□	□	□	□		□
14	□	□	□	□	□	□		□

Meaning of Headings

Unclear: The meaning of the question is unclear, confusing, or ambiguous.
Double question: The question is asking about two different things at the same time. (For example, "What is your favorite color, and how many shirts do you own in that color?")
Missing answer choice: The answer I would want to choose is not an option. Either an option needs to be added, or there needs to be an adjustment to the current answer choices that are listed.
Wordy: The question is too long or too wordy.
Adjust question order: The question appears to be in a location that is not ideal. It would be better to move the question to a different location in the survey.
Other: Select this option if there is something you would recommend changing about the question that is not included in the previous headings. Please indicate the change you would recommend in the comments section.
Comments: If you have selected "other," please provide comments explaining what should be improved about the question.
Fine as is!: Select this option if you do not think the question needs to be changed.

Appendix E

Feedback From Survey Pilot Testing

Table E1

Number of Survey Pilot Testers Selecting Each Feedback Option and Comments Provided

Question #	Unclear	Double Question	Missing Answer Choice	Wordy	Adjust Question Order	Other (see Comments)	Comments	Fine As Is!
1								3
2						1	Capitalize Quality Interactions or define it so participants know that the term refers to a particular training.	2
3						2	Capitalize Quality Interactions; Remove “if any” to simplify the question	1
4		1				2	Consider removing reference to feelings; Capitalize Quality Interactions; Could there be an “other” if none apply?; The way the second choice reads may be interpreted in two ways. Are you asking if the teacher was successful implementing the strategies learned or quality interactions as a whole?	
5						1	Remove “if at all” from the question	2
6						1	Add “I did not implement…” as an option	2
7						2	What if the teacher hasn’t implemented Quality Interactions that week (for example if students are testing)?; Add “what/who”	1
8						2	What if the teacher hasn’t implemented Quality Interactions that week (for example if students are testing)?; Add “what/who”	1
9						1	Could this be a checkbox? Check all that apply?	2
10						1	Name of “location” instead of school	2
11						1	“other” option?	2
12								3
13						2	Include an option for “prefer not to answer”	1
14								3

Feedback About Survey Dissemination

Method of Dissemination

The pilot testers agreed that it would be best to administer the survey electronically through email.

Addressing Non-Response

One pilot tester suggested that more people might complete the survey if someone they knew personally encouraged them to do so. This pilot tester recommended, for example, that the researcher could inform English learner department chairs and lead teachers about the research study to see if those individuals could encourage colleagues at their schools to complete the survey.

Changes to Survey as a Result of Pilot Testing

- I capitalized "Quality Interactions" in all questions.
- I switched the order of questions 5 and 6 to put the question about confidence with implementation of the professional learning before the question about how frequently teachers included specific aspects of the professional learning in their instruction. The purpose of this change was to include logic in the survey so that people who indicate in question 4 that they did not implement the Quality Interactions professional learning would not see question 5, which asked about their confidence with implementing the professional learning.
- In questions 7 and 8, I deleted "this week" to allow for teachers to comment about their implementation in general, rather than tied to a specific week.

Appendix F

Observation Protocol

Table F1

Basic Observation Information

Date and Time of Observation	School	Subject/Course	Teacher

Table F2

Observation Notes about Quality Interactions Implementation

Content From Quality Interactions Professional Learning	Complete	Attempt	Not Observed
Open-Ended Questions or Prompts	☐	☐	☐
Language of Interaction	☐	☐	☐
Feedback About Interaction	☐	☐	☐
Opinion Continuum	☐	☐	☐
Information Gap	☐	☐	☐
Role Play	☐	☐	☐
Notes About Teacher's Facilitation of Quality Interactions			
Teachers' Ideas			

wait time; student grouping; students' opinions; structured activities; explicit expectations; sentence starters; thought-provoking; asking why; teachers as facilitators; scaffolding	

Explanation of Terms

Complete: The content is implemented how it was presented in the quality interactions professional learning. Teachers might copy the ideas exactly as they were presented, or they might adapt the ideas to meet the needs of their students and/or their content area while still maintaining the general idea. To check this box, students must not be completing their task silently or independently.

Attempt: The content is not quite implemented how it was presented in the quality interactions professional learning. Teachers might attempt to implement the ideas from the professional learning, but the implementation is missing a critical component. Students might be completing their task silently or independently.

Open-Ended Questions and Prompts: Open-ended questions and prompts have more than one possible answer. Prompts provide students instructions for a thought-provoking task that cannot be completed silently or independently.

Language of Interaction: Teacher specifies phrases or sentences that students should use in their interactions. These phrases or sentences should align with language skills, such as summarizing, politely disagreeing, building on someone else's idea, etc.

Feedback About Interaction: The teacher lets students know strengths and areas for improvement related to their classroom interactions. This feedback might be oral or written. Alternately, the teacher might provide students with a tool, such as a rubric or a checklist, which is intended to be used for self-reflection or peer feedback about the interactions.

Opinion Continuum: The teacher facilitates an opinion continuum structure during the lesson. This structure involves students indicating the degree of their agreement or disagreement about a controversial statement and discussing the reasons for their opinions in groups. An opinion continuum should not be completed independently or silently.

Information Gap: The teacher facilitates an information gap structure during the lesson. This structure involves students having access to different pieces of information and needing to communicate to use both sets of information to answer a question or solve a problem. An information gap should not be completed independently or silently.

Role Play: The teacher facilitates a role play structure. This structure involves students taking on a role or persona for a specific purpose. While acting in character, students interact with each other as they discuss a certain question or complete an assigned task. A role play should not be completed independently or silently.

Appendix G

Interview Protocol

Introductory Remarks

Good evening! I am Amy Sherman, an instructional specialist with the CPS English Language Development Office and a doctoral student at the University of Virginia. Thank you for taking the time to participate in this interview today, which will last for approximately 30-45 minutes. The data that I collect from the interview today will be used for my capstone research project I am completing for the University of Virginia. The purpose of this interview is to find out about your perspectives about the implementation of professional learning. Your comments will be valuable because I would like to include teachers' perspectives in any recommendations I might make about the school district's approach to supporting the implementation of professional learning. I am not expecting or hoping for certain types of responses, and any perspectives you provide will be welcome. I will develop a transcript of this session, and you will be given a pseudonym in this transcript so that your comments cannot be attributed to your personally. May I have your permission to record this session to assist me with developing a transcript? *(assuming yes…)* Feel free to change the name that is visible on your Zoom account if you would like. Before we begin, do you have any questions for me about this interview or how the data I collect will be used?

Transition Statement

During the interview, I will be asking questions, listening, and taking notes that will help me focus on key points that you are making. If you notice that I am not always making eye contact, it is likely that I am taking notes. Now let's get started with the interview.

Opening Questions

Could you please introduce yourself with your name, where/what you teach, and anything else you'd like to share about your background as a teacher?

Transition Statement

Now that I know a little about your background, I'd like to hear your opinions on some specific topics.

Body Questions

1. What does the term "quality interactions" mean to you?
2. According to my records, you have participated in _____ *(options include: the 2-hour quality interactions workshop, the 6-hour quality interactions series, collaborative planning focusing on quality student-to-student interactions, and/or classroom observations focusing on quality student-to-student interactions)*. What do you remember about the quality interactions professional learning you participated in during the 2020-2021 or 2021-2022 school year? *(If they do not remember the content of the professional learning, remind them that they learned about ways to facilitate students' (especially English learners') sustained, reciprocal conversations with peers about academic content.)*
3. Let's discuss how the quality interactions professional learning relates to your classroom.
    a. Tell me about whether participating in the quality interactions professional learning has impacted your classroom instruction in general. If you have applied any of the ideas

from the professional learning to instruction with your students, what have you implemented and how? If you haven't applied any of the ideas from the professional learning to instruction with your students, why not?

   b. I recently visited your classroom while you were teaching lessons about ___ and _____ *(insert topics of the lessons I observed)*. Did the quality interactions professional learning impact your classroom instruction for those lessons? Why or why not?
   c. *(If the quality interactions professional learning impacted the instruction for the lessons I observed)* Tell me about how the how the quality interactions professional learning impacted the specific lessons I observed. What decisions did you make when planning or teaching the lesson that applied the quality interactions professional learning?

4. What are some of the factors that can make implementing the quality interactions professional learning easier or harder for teachers?
   a. If you have applied the quality interactions professional learning to your instruction, what supported this transfer from professional learning to instructional practice?
   b. What has made implementation of the ideas from the quality interactions professional learning challenging? If you have not implemented the ideas from the quality interactions professional learning in your classroom, or have not implemented them much, why not?
   c. What would be most helpful to you in supporting your implementation of the quality interactions professional learning?
   d. What would you want to learn more about that would support your facilitation of quality interactions among students during classroom instruction? What would you change, if anything, about the quality interactions professional learning to make it easier to implement in your classroom?

Transition Statement

That was the last question I have for you today. Thank you for sharing your opinions related to the quality interactions professional learning and its transfer to classroom instruction.

Closing Questions

Based on what I've heard, you feel that _____. Is this an accurate reflection of your opinions? Do you have anything to add that you didn't have a chance to say yet? Thank you for your participation, and feel free to contact me if you have any questions about this interview or about how I intend to use the data I collected.

Appendix H

Survey Cover Letter

Dear [*Insert Name Here*],

I am writing to request your participation in a survey about your implementation of the professional learning you have completed about quality interactions for English learners. The purpose of the survey is to collect data that will guide adjustments to the professional learning process so that it is as useful for teachers and as impactful for English learners as possible. This survey is being administered as part of my doctoral studies and will be included in my doctoral capstone project (titled Secondary Content Teachers' Implementation of Professional Learning About Quality Interactions for English Learners).

You were chosen to participate in this survey as a secondary core content teacher who has attended a Quality Interactions workshop and/or the Facilitating Quality Interactions series. If you choose to complete the survey, your responses will be confidential and will only be reported as part of group summaries. None of your responses will be reported as connected with your name. The survey should take no more than 20 minutes to complete.

Your personal link to the survey can be accessed here: [*survey link*]

If you have any questions about this survey or the research study, please feel free to email or call me using the contact information listed below. Additional information about your rights as a research participant can be found here: https://research.virginia.edu/research-participants.

Completing the survey qualifies you to be entered into a drawing for a $50 Amazon gift card. Thank you in advance for providing your perspective on the quality interactions professional learning you have attended. Your participation in this survey will have a meaningful impact on decisions that affect professional learning for teachers and instruction for English learners.

Sincerely,

Amy Sherman

Doctoral Candidate
University of Virginia
as6fu@virginia.edu
(###)###-####

SIOP Coach & English Learner Early Childhood Specialist
CPS English Language Development Office

IRB protocol #5134

Appendix I

Survey Administration Plan

Stage #1: Notification and Distributing the Survey

The first stage of survey administration was to notify the participants that they were being asked to complete a survey and to distribute the survey. Initial distribution took place via email, and participants were invited to use a personalized link to access the survey. The email included a personalized salutation and information about why the survey was important. See Appendix H to read the cover letter that accompanied the survey.

Stage #2: Reminder Notification

The second stage of survey administration was differentiated depending on whether participants had already responded to the survey.

- Option 1: Email sent approximately one week after distributing the survey thanking those who had completed it. Removed these participants from the list of those who needed reminders about survey completion.
- Option 2: Email sent approximately one week after distributing the survey reminding participants to complete the survey.

Stage #3: Third Distribution of Survey

The third stage of survey administration was differentiated depending on whether participants had already responded to the survey.

- Option 1: Email automatically and immediately sent through Qualtrics thanking those who had completed the survey. Removed these participants from the list of those who needed reminders about survey completion.
- Option 2: Paper letter sent through inter-office mail to participants' schools requesting that they complete a paper copy of the survey. This letter included a return envelope and instructions for survey completion and return.

Stage #4: Fourth Distribution of Survey

The fourth stage of survey administration was differentiated depending on whether participants had already responded to the survey.

- Option 1: Email automatically and immediately sent approximately one week after the reminder notification in stage three thanking those who had completed the survey. Removed these participants from the list of those who needed reminders about survey completion.
- Option 2: Email sent approximately one week after distributing the paper survey reminding participants to complete the survey.

Stage #5: Thank You Email

Approximately two weeks after mailing the paper copy of the survey, I emailed those who completed the paper survey during stage four to thank them for their participation. Every two weeks after that, I continued to email thank you messages to participants who had completed the paper survey. Participants who completed the digital survey received automatic thank you emails.

Appendix J

Data Management Plan

This document provides an overview of the data management plan for my research. The plan includes a description of the type of data I collected, as well as how I stored, organized, shared, and preserved the data.

Data Types and Storage

The types of data generated in this project included survey data, classroom observation notes, and interview recordings and transcripts. Surveys occurred through Qualtrics, and I stored the survey data in my Qualtrics account, which required a username and password to access. Classroom observation notes were in the form of observation protocol templates. The interviews took place over Zoom, and I collected recordings of the interview sessions, as well as transcripts of those sessions. I stored the classroom observation and interview data, along with the data analysis for all three data sources, in UVA Box, a secure cloud storage system that required me to log in to my account and prove my identity through the Duo Mobile application.

Data Organization

The plan for organizing the data included a main data spreadsheet and a specific file-naming convention. The main data spreadsheet organized the lists of participants, as well as schedules for classroom observations and interviews. I assigned each participant a unique identifier to protect their identity. To organize the survey analysis, observation protocol notes, and interview recordings and transcripts, I used the following system for naming files:

Year_Month_Date_TypeOfData_ParticipantIdentifier.

I saved these files in an organized folder structure in UVA Box. The file organization included the following folders:

Research

Main Data Sheet

Surveys

Data Analysis

Observations

Observation Protocol Notes

Data Analysis

Interviews

Video Recordings

Transcripts

Data Analysis

Data Sharing and Preservation

I maintained sole use of the data. After my graduation, the contents of my UVA Box account will automatically transfer to a newly created personal Box account. I will maintain the data for five years, after which I will delete the data from my personal Box account.

Appendix K

Survey Codebook

Table K1

Survey Codebook

Variable Name	TYPEPL
Variable Label	Type of professional learning teacher has participated in
Question	Which of the following types of professional learning have you participated in with CPS?
Values	
1	A 2-hour workshop titled Quality Interactions
2	A 3-part series (over 3 months) titled Facilitating Quality Interactions
3	School-based collaborative lesson planning about quality interactions with a professional learning community
4	School-based coaching and/or peer observations focusing on quality interactions
99	Missing value
Variable Name	WHENPL
Variable Label	When the teacher participated most recently in professional learning about quality interactions
Question	When did you most recently participate in professional learning about Quality Interactions?
Values	
1	Within the past month
2	Within the past 2-3 months
3	4-6 months ago
4	7-12 months ago
5	Greater than 12 months ago
99	Missing value
Variable Name	CHANGEIP
Variable Label	Change in instructional practice caused by quality interactions professional learning
Question	What level of change, if any, has the Quality Interactions professional learning caused in your instructional practice?
Values	
4	Significant change
3	Moderate change
2	Minimal change

1	No change
99	Missing Value
Variable Name	STGIMP
Variable Label	Stage on the continuum of implementation
Question	Which of the following best describes your implementation of the Quality Interactions professional learning?
Values	
1	I have not implemented the Quality Interactions professional learning with my students.
2	I tried to implement the Quality Interactions professional learning with my students, but I don't think my implementation was aligned with the ideas and examples from the professional learning.
3	I implemented the Quality Interactions professional learning with my students, and I referred back to the professional learning materials to try to replicate the examples.
4	I felt comfortable implementing the Quality Interactions professional learning with my students. What I did with my students was just like the example(s) from the professional learning even though I did not refer back to the session materials as a resource.
5	I implemented the Quality Interactions professional learning with my students. To do so, I made some adaptations that were discussed during the Quality Interactions professional learning.
6	I implemented the Quality Interactions professional learning with my students. To do so, I made some adaptations based on the needs of my particular students. I thought of these adaptations on my own, and they supported sustained academic discourse among students.
99	Missing value
Variable Name	CONFIDENCE
Variable Label	Teachers' confidence with implementing the quality interactions professional learning in their classroom instruction
Question	If you included aspects from the quality interactions professional learning into your classroom instruction this week, how confident did you feel while implementing these ideas?
Values	
1	Not at all confident
2	A little confident
3	Somewhat confident
4	Very confident
5	Completely confident
99	Missing value

Variable Name	FREQAPP
Variable Label	frequency of applying professional learning to instruction
Question	**Since participating in the professional learning about quality interactions, how often, if at all, have you included aspects from the professional learning into your classroom instruction?**
Values	
Open-ended questions	
4	Frequently
3	Sometimes
2	Seldom
1	Never
99	Missing value
Prompts	
4	Frequently
3	Sometimes
2	Seldom
1	Never
99	Missing value
Language of interaction	
4	Frequently
3	Sometimes
2	Seldom
1	Never
99	Missing value
Feedback about interaction	
4	Frequently
3	Sometimes
2	Seldom
1	Never
99	Missing value
Opinion continuum	
4	Frequently
3	Sometimes
2	Seldom
1	Never
99	Missing value
Information gap	

4	Frequently
3	Sometimes
2	Seldom
1	Never
99	Missing value
Role play	
4	Frequently
3	Sometimes
2	Seldom
1	Never
99	Missing value
Variable Name	CONTENT
Variable Label	Content taught
Question	Which do you teach?
Values	
1	English language arts
2	Math
3	Science
4	Social studies
5	Special education
99	Missing Value
Variable Name	BILINGUAL
Variable Label	Bilingual/multilingual?
Question	Do you consider yourself to be bilingual or multilingual? If so, please indicate the languages you know proficiently.
Values	
1	No
2	Yes
99	Missing value
Variable Name	RACE
Variable Label	Race/ethnicity
Question	Do you identify as any of the following?
Values	
1	Asian and/or Asian American
2	Black and/or African American
3	Hispanic and/or Latinx
4	Native American, Native Alaskan, and/or American Indian
5	Native Hawaiian and/or Pacific Islander

6	White and/or Caucasian
7	Other
99	Missing value

Appendix L

Inductive Codes for Qualitative Analysis

Table L1

Inductive Codes Developed While Analyzing Survey and Interview Data

Codes from Surveys	Codes from Interviews
Already did that	Best practice
Chunking	Control
Classroom climate	Difficult content
Content of PL	Grouping
Doesn't fit with content	Intuitive
Examples	Literal
Fits with content	Long time ago
Full plate	Missing the mark
High student needs	Misunderstanding
"If it's not broke, why fix it?"	Narrow focus
Increased confidence	Optional
Materials Provided	Overgeneralization
Need support	School policies
No barriers	School support
Not for non-ELs	Skewed perception
Ongoing	The spirit of it
Overwhelmed	Student motivation
Practice	Student perception
Reinforcing ideas	You missed it
Resistance from co-teacher	
Space	
Structures	
Too many initiatives	
Too much PL	
Useful	
Varying student needs	
Virtual PL format	
Virtual implementation	

Appendix M

A Priori Codes for Interview Data Analysis

Administrator support

Coaching

Collaboration

Compliance

Continuum of implementation

Effective facilitator

Flexibility

Follow-up

Helped transfer

Hindered transfer

Ineffective facilitator

Inflexibility

“Learning space”

Motivation

Negative attitude

Perspective shift

PLC

Positive attitude

Relationship with facilitator

Resistance

Sustained

Teacher’s role

The why

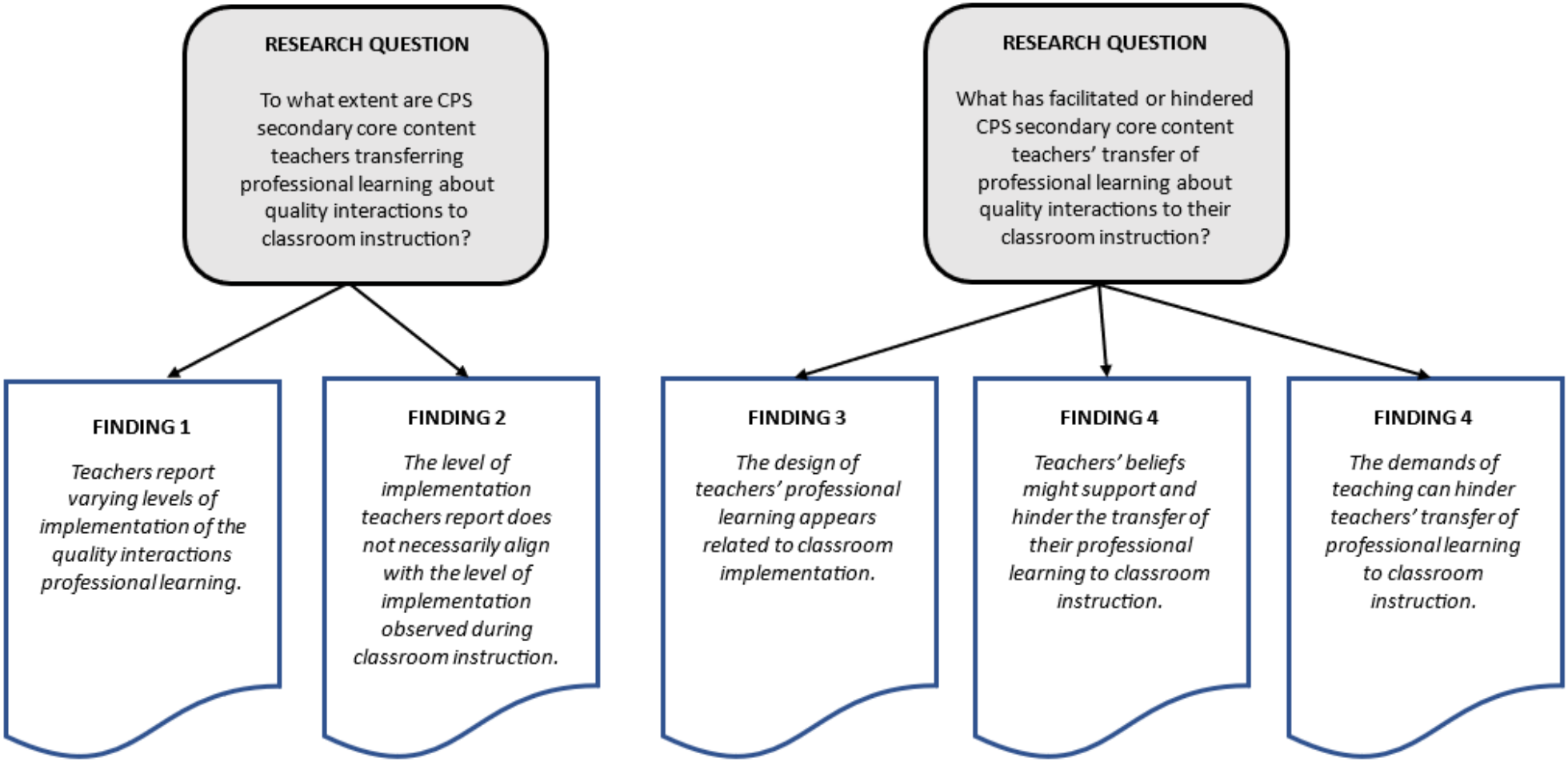
Time

Appendix N

Alignment Between Research Questions and Findings

Figure N1

Alignment Between Research Questions and Findings



Appendix O

Survey Data Frequency Tables

Table O1

Type of Professional Learning Completed According to Participants

Q1: Which of the following types of professional learning have you participated in with CPS? (select at least one response)	Count	Percent
A 2-hour workshop titled Quality Interactions	94	83%
A 3-part series (over 3 months) titled Facilitating Quality Interactions	14	12%
School-based coaching and/or peer observations focusing on Quality Interactions	22	19%
School-based collaborative lesson planning about Quality Interactions with a professional learning community	19	17%

Table O2

Type of Professional Learning Completed According to CPS Records

Q1: Which of the following types of professional learning have you participated in with CPS? (select at least one response)	Count	Percent
A 2-hour workshop titled Quality Interactions	111	98%
A 3-part series (over 3 months) titled Facilitating Quality Interactions	9	8%
School-based coaching and/or peer observations focusing on Quality Interactions	11	10%
School-based collaborative lesson planning about Quality Interactions with a professional learning community	3	3%

Table O3

Timing of Professional Learning

Q2: When did you most recently participate in professional learning about Quality Interactions? (select one response)	Count	Percent
Within the past month	6	5%
Within the past 2-3 months	17	15%
4-6 months ago	38	34%

7-12 months ago	33	29%
More than 12 months ago	17	15%
No response	2	2%

Table O4

Level of Change Caused By Quality Interactions Professional Learning

Q3: What level of change, if any, has the Quality Interactions professional learning caused in your instructional practice? (select one response)	**Count**	**Percent**
Significant change	8	7%
Moderate change	57	50%
Minimal change	44	39%
No change	3	3%
No response	1	1%

Table O5

Teachers' Level of Implementation

Q4: Which of the following best describes your implementation of the Quality Interactions professional learning? (select one response)	**Count**	**Percent**
I have not implemented the Quality Interactions professional learning with my students.	8	7%
I tried to implement the Quality Interactions professional learning with my students, but I don't think my implementation was aligned with the ideas and examples from the professional learning.	17	15%
I implemented the Quality Interactions professional learning with my students, and I referred back to the professional learning materials to try to replicate the examples.	18	16%
I felt comfortable implementing the Quality Interactions professional learning with my students. What I did with my students was just like the example(s) from the professional learning even though I did not refer back to the session materials as a resource.	18	16%
I implemented the Quality Interactions professional learning with my students. To do so, I made some adaptations that were discussed during the Quality Interactions professional learning.	27	24%
I implemented the Quality Interactions professional learning with my students. To do so, I made some adaptations based on the needs of my particular students. I thought of these adaptations on my own, and they supported sustained academic discourse among students.	19	17%
No response	6	5%

Table O6

Confidence During Implementation

Q5_1: How confident did you feel while implementing the ideas from the Quality Interactions professional learning? - (select one response)	Count	Percent
Not at all confident	0	0%
A little confident	4	4%
Somewhat confident	44	39%
Very confident	44	39%
Completely confident	6	5%
No response	15	13%

Table O7

Implementation of Open-Ended Questions

Q6_1: Since participating in the professional learning about Quality Interactions, how often, if at all, have you included aspects from the professional learning into your classroom instruction? (select one response for each row) - Open-ended questions	Count	Percent
Frequently	72	64%
Sometimes	31	27%
Seldom	1	1%
Never	1	1%
No response	8	7%

Table O8

Implementation of Prompts

Q6_2: Since participating in the professional learning about Quality Interactions, how often, if at all, have you included aspects from the professional learning into your classroom instruction? (select one response for each row) - Prompts	Count	Percent
Frequently	70	62%
Sometimes	32	28%
Seldom	2	2%
Never	1	1%
No response	8	7%

Table O9

Implementation of Language of Interaction

Q6_3: Since participating in the professional learning about Quality Interactions, how often, if at all, have you included aspects from the professional learning into your classroom instruction? (select one response for each row) - Language of interaction	**Count**	**Percent**
Frequently	36	32%
Sometimes	50	44%
Seldom	16	14%
Never	2	2%
No response	9	8%

Table O10

Implementation of Feedback About Interaction

Q6_4: Since participating in the professional learning about Quality Interactions, how often, if at all, have you included aspects from the professional learning into your classroom instruction? (select one response for each row) - Feedback about interaction	**Count**	**Percent**
Frequently	25	22%
Sometimes	59	52%
Seldom	13	12%
Never	5	4%
No response	11	10%

Table O11

Implementation of Opinion Continuum

Q6_5: Since participating in the professional learning about Quality Interactions, how often, if at all, have you included aspects from the professional learning into your classroom instruction? (select one response for each row) - Opinion continuum	**Count**	**Percent**
Frequently	12	11%
Sometimes	56	50%
Seldom	25	22%
Never	11	10%
No response	9	8%

Table O12

Implementation of Information Gap

Q6_6: Since participating in the professional learning about Quality Interactions, how often, if at all, have you included aspects from the professional learning into your classroom instruction? (select one response for each row) - Information gap	Count	Percent
Frequently	14	12%
Sometimes	53	47%
Seldom	24	21%
Never	11	10%
No response	11	10%

Table O13

Implementation of Role Play

Q6_7: Since participating in the professional learning about Quality Interactions, how often, if at all, have you included aspects from the professional learning into your classroom instruction? (select one response for each row) - Role play	Count	Percent
Frequently	15	13%
Sometimes	34	30%
Seldom	31	27%
Never	24	21%
No response	9	8%

Table O14

Size of English Learner Population

Size of English Learner Population	Count	Percent
Small	37	33%
medium	68	60%
Large	8	7%

Table O15

Teachers' Content Areas

Q11: Which do you teach? (select at least one response)	Count	Percent

English language arts	18	16%
Math	19	17%
Science	23	20%
Social Studies	18	16%
Special education	35	31%

Table O16

Multilingual Status

Q12: Do you consider yourself to be bilingual or multilingual? If so, please indicate the languages you know proficiently. - Selected Choice	**Count**	**Percent**
No	86	76%
Yes	18	16%
No response	9	8%

Table O17

Participants' Race or Ethnicity

Q13: Do you identify as any of the following? (Please select all that apply.) - Selected Choice	**Count**	**Percent**
Asian and/or Asian American	7	6%
Black and/or African American	19	17%
Hispanic and/or Latinx	5	4%
White and/or Caucasian	73	65%
Other	2	2%
No response	10	9%

Table O18

Years of Teaching

Q14: How many years of teaching experience do you have, including the current school year? (Please type a whole number.)	**Count**	**Percent**
3 or fewer	2	2%
4-6	9	8%
7-10	17	15%
11-15	12	11%
16-20	19	17%
21-25	20	18%

26-30	20	18%
31 or more	5	4%
No response	9	8%

Appendix P

Recommendations for CPS

Table P1

Recommendations and Action Steps

Recommendation 1: Establish a Clear Professional Learning Focus	
Reduce the Quantity of Professional Learning Topics	*Action Steps:* • *At the central office level, coordinate and prioritize professional learning topics so that the quantity can be reduced to a manageable level.*
Clarify the Goal of the Quality Interactions Professional Learning	*Action Steps:* • *Clarify the goal of the quality interactions professional learning, and be consistent when communicating that goal to teachers.*
Clarify the Rationale Behind the Quality Interactions Professional Learning	*Action Steps:* • *Consistently communicate with teachers about the rationale behind the quality interactions professional learning.* • *Provide teachers with data about student discourse in their classrooms so they recognize the frequency of quality interactions.* • *Support collaboration between the English Language Development Office and content offices to ensure that messaging about the importance of implementing quality interactions also comes from content-specific sources.*
Recommendation 2: Offer Continued Professional Learning	
Provide Content-Specific Professional Learning About Quality Interactions for Math Teachers	*Action Steps:* • *Provide content-specific professional learning for math teachers, with collaboration between the Mathematics Office and the English Language Development Office, to boost math teachers' facilitation of student discourse during classroom instruction*
Coordinate Sustained Professional Learning	*Action Steps:* • *Provide existing quality interactions workshops for teachers who are not familiar with the concept.* • *Collaborate with representatives from content area offices, administrators, the professional learning office, and teachers to develop a plan for sustained, district-wide follow up about facilitating quality interactions in classroom instruction.*

	• *Make video recordings of lessons employing quality interactions, and share these videos with CPS teachers.* • *Organize a cohort of teachers to meet periodically to discuss quality interactions, develop sample lessons and materials, and try out the lessons in their classrooms.* • *Use these lesson plans and videos as resources to encourage other teachers to try the ideas in their own instruction.*
Recommendation 3: Provide Structural Support	
Provide Structural Support	*Action Steps:* • *Work with school-based administrators about ways to provide ongoing, structural support for teachers' implementation of their professional learning.*