

From Theoretical Roots to Empirical Outcomes: The Interdisciplinary Foundations of Quality Talk in Taiwan



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Abstract Critical, reflective dialogue is essential for enhancing students' interactions with text and content. During productive discussions, students learn to reflect, refine, and expand their understandings through collaborative and challenging exchanges with teachers and peers. Such exchanges demand a discourse-intensive and contextually responsive pedagogical approach. In this chapter, we introduce such an approach to productive small-group discussions called Quality Talk (QT). Specifically, we delineate QT's theoretical roots and summarize its empirical foundations. After which, we present the core elements of QT as well as our iterative refinement of QT to meet the needs of teachers and students across various contexts. We highlight the importance of recontextualization when *remaking* QT and present QT implementation in various domains or cultural contexts. Further, we provide empirical findings for each version of QT implementation from our program of QT research. Finally, we summarize why QT has worked effectively over time.

1 Introduction

Critical, reflective dialogue is vital to the health and the well-being of the human condition. It is what fuels human ingenuity, compassion, questioning, learning, and knowing, and mitigates the potential for the oppressive dehumanizing of others (Shor & Freire, 1987). It is a function as old as language and utterly central to the socially-situated pursuit of understanding shared by teachers and students. Within a classroom setting, productive dialogues or discussions are predominantly collaborative, open-ended episodes of talk among all members of a learning community. The goal

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of such discussions can vary from encouraging reasoning and problem-solving to comprehension or literary appreciation (Murphy, Wilkinson et al., 2017). Regardless of these varied goals, productive classroom discussions welcome multiple voices and diverse perspectives, transforming teaching and learning into an experience that is more dialogic than didactic, more transactional than transmissionary, and more irresolute than resolute (Murphy, 2018).

Although there are various techniques designed to foster classroom dialogue (e.g., Book Club, Raphael & McMahon, 1994; Questioning the Author, Beck & McKeown, 2006), we focus our attention in this chapter on a theoretically-driven and empirically-supported approach to small-group, classroom discussion called Quality Talk (QT). QT is a teacher-facilitated discussion approach whose central pedagogical aim is to foster students' critical-analytic thinking and reasoning *about*, *around*, and *with* text and the ideas it conveys. We begin the chapter with a select theoretical grounding of discussion as it relates to classroom learning. Given the focus of this volume, we attend primarily to the disciplines of philosophy, psychology, and education, paying particular homage to three transformative thinkers whose writings ground QT, John Dewey, Lev Vygotsky, and Paulo Freire. The insights of these three have proven especially influential as we set out to plant the seeds of QT in South Africa and Taiwan, environs socioculturally unique from the United States where QT first took root. With an awareness born of years of scholarly partnership and collaboration, we appreciate that even small differences in the environment can bring about subtle but relevant changes in what is implanted. Therefore, we first describe the empirical roots of the QT intervention, including the models for discussion and professional development that grew out of the empirical grounding. Then we consider the variants of the QT intervention that have sprung forth in the diverse sociocultural environs where that intervention has been implemented, and the empirical findings that have been reaped. Finally, we close with thoughts on the promising new developments emerging in Taiwan and about the future of QT as a way to sustain meaningful dialogue and fuel positive human interaction.

2 Justifying Quality Discussions

Recordings of discussion or talk as a pedagogical tool for enriching students' thinking date to the earliest written documents in both Eastern and Western traditions (Palmer, 2001). Indeed, we find praise for quality discussions in the writings of Eastern and Western philosophers spanning the course of history from ancient times to the Medieval period and into the Modern era. Whether the sources are the words of Confucius or Plato in the fourth- and fifth-century BCE, the Hindi Canon from second-century CE, the treatises of Locke and Hume in the seventeenth century, or Dewey's essays that span the nineteenth and twentieth centuries, there is ample justification for embedding quality discussions in learning environments (see Murphy, Wilkinson et al., 2017 for extended overview of these traditions).

A key understanding gleaned from this extensive body of writings is that responding to humanity's most vexing questions is, in part, a social endeavor that demands sound justification—justification that can withstand a barrage of counterarguments. Further, it becomes evident that fruitful discussion must be cultivated over recurring points in time such that ideas can be revisited, reexamined, and refined given the changing nature of the human condition. Indeed, discussions can transcend the boundaries of a person's lifetime. Although it seems that there are basic quandaries, such as the relation between language and thought or mind/body dualism, that may never be resolved through critical, reflective dialogue, there are untold questions that can be fruitfully explored through quality discussions. As John Dewey (1916) explained: "Discussion is...bringing various beliefs together; shaking one against the other and tearing down their rigidity...it is conversation of thoughts; it is dialogue—the mother of dialectic..." (pp. 194–195). Through this *conversation of thoughts*, individuals singularly or as part of a *social assemblage* begin to develop a sense of logic and embrace the value of meaning-making. Dewey (1916) held that with repeated exposure to critical, reflective discussions, individuals would internalize this type of weighing and evaluating of evidence as a habit of mind.

3 Conceptualizing and Recontextualizing Quality Talk

While philosophical writings lend support for the use of critical, reflective discussion, the array of psychological theories—be they cognitive, sociocultural, or dialogic—elucidates the mechanisms by which discussion contributes to thinking and reasoning. From a cognitive perspective, discussion is seen to promote active engagement in meaning-making from text and content (McKeown et al., 2009), elaboration and explanation of understanding (Fonseca & Chi, 2011; Hatano & Inagaki, 2013), and evaluation of claims and evidence (Greene et al., 2016). From a sociocultural perspective, a particularly high value is placed on language as a mechanism for thinking (Vygotsky, 1978). Essentially, Vygotsky (1978) held that children develop language to express their ideas or thoughts using the tools and signs of their culture. With repeated exposure to critical, reflective discussions, children eventually internalize the discourse community as the voice of "social others" guiding their thoughts. Thus, like Dewey, Vygotsky valued discussion for its ability to foster students' co-construction of knowledge and understandings about content, to internalize ways of thinking that promote knowledge acquisition and refinement, and to forge habits of mind needed for meaningful learning (Cobb, 1999; Wells, 2007).

In addition to the rich lineage of work exploring discussion enacted as pedagogy and mental processing, there have been substantial considerations of discussion or dialogue that traverse philosophy, psychology, and education as they unfold within and across social and cultural boundaries. Among the notable thinkers who have contributed to our understanding of the social and cultural implications of discussion are Karl Marx (Marx & Engels, 2004) and Charles Cooley (1902). Although the scholarship of these two individuals emerged from vastly different fields, their

writings richly and independently established the powerful role that discussion plays when individual, society, and culture are not treated as separate entities. As we have asserted (Murphy, Wilkinson et al., 2017), one of the remarkable advantages of discussions about text and content is that it exposes students to a variety of views and perspectives—views that cannot be disentangled from the society or culture from which the views arose. Indeed, what we read in Dewey, Vygotsky, and Cooley is that critical-analytic discussions provide a “looking glass” through which students become cognizant of the extent to which their interpretations, explanations, perceptions, or understandings are intimately intertwined in the fabric of their socially- and culturally-embedded experiences.

As we have begun to collaborate with colleagues to recontextualize QT for diverse contexts, we have had numerous opportunities to consider and reconsider what constitutes QT’s core elements and needs to be treated as foundational and what is more reflective of our Western social and cultural dispositions. In these considerations, we have been profoundly influenced by the writings of Paulo Freire (2000). Like Dewey and Vygotsky, Freire held that dialogue is an epistemic position. That is to say, the process of coming to know, while an endeavor of an individual mind, requires a social, dialogic component where ideas and understandings could undergo social rumination. This social rumination, as Freire tells us, “seals the relationship” between the learner (i.e., “cognitive subjects”), the knower (i.e., “the subjects that know”), and those trying to learn (i.e., “who try to know”) (p. 13). Beyond sealing the relationship, dialogue exposes understandings to the knowledge and experiences of the participants, which necessarily enriches and situates the object of knowledge within a cultural context. Dialogue also provides a forum for achieving a socially verifiable accounting of what one knows—a reckoning and parsing of the claims, reasons, and evidence of group members leading to co-constructed, examined understandings (i.e., *knowledge*; Murphy, 2007, 2018).

As an educator, key aspects of Freire’s written work pertained to the processes of knowing and coming to know as it occurred in schools, particularly through students’ interactions with teachers and text. In *Pedagogy of the Oppressed* (Freire, 2000) and subsequent work (e.g., Shor & Freire, 1987), Freire avers that schools are plagued by narrativity and that far too many schools and teachers endorsed and enacted a “banking concept” of education. In the banking concept, the role of the teacher, the authoritative, narrative storyteller, is to make knowledge deposits in the bank, which students can then withdraw. Freire (1998) warns that this banking conception gives way to a “mechanical transference from which results machinelike memorization” (p. 22). By contrast, Freire proposes a problem-posing conceptualization of teaching and learning in which learning is theorized as “...a process where knowledge is presented to us, then shaped through understanding, discussion and reflection” (p. 22). In such a scenario, the roles of teachers and students are multi-faceted (Wei & Murphy, 2018). The teacher, as a knowledgeable other, still plays a primary role as information presenter, but the goal is for students to critically examine the information as a central feature of coming to know or comprehend. Necessarily, this process of comprehending is achieved through meaningful, productive discussions about text and content.

As Freire suggested, this is not a natural or easy process for teachers or students. “Comprehension needs to be worked, forged, by those who read and study...it [comprehension] is a patient and impatient exercise on the part of someone whose intent is not to know it all at once but to struggle to meet the timing of knowledge” (Freire, 1998, p. 23). Through this process, the teacher and students participating in the dialogic process of examination, jointly and individually, taking part in a transaction about, around, and with the text or content. Importantly, the dialogic transaction with the text or content provides opportunities for students to compare and position the new knowledge within and against their prior knowledge and experiences. In so doing, students construct or co-construct new texts and new content that reflect their knowledge and experience (Wells, 1989).

Moreover, Shor and Freire (1987) insisted that dialectical teaching should not just be considered a “mere technique” (p. 13) used to achieve some result or to make students our friends. Rather, the purpose and intent of dialectical teaching should be to enhance critical reflective thinking thereby coming to know what we know and do not know through challenging communication. In essence, dialectical teaching should enable students to know what they know and do not know, and over time it should contribute to students’ capacity to transform their reality. Although it is difficult to gauge the extent to which a given form of dialogic pedagogy will enhance students’ ability to transform their reality (i.e., longer-term distal effects), it is possible to gather proximal indicators regarding the extent to which dialogic methods transform the ways that students examine their understandings using critical, reflective talk (i.e., academically productive). Indeed, what is evident in the extant, contemporary literature is that methods of discourse-intensive teaching (e.g., classroom discussions) vary greatly, with some forms of dialogic talk leading to academically productive communications and others maintaining didactic communication (Mehan, 1979; Murphy et al., 2009).

Freire (2000) also often wrote about the extent to which pedagogy is intricately interwoven with culture and context. A pedagogical approach cannot simply be packaged in one place and transported to another place with the expectation that it will operate identically. Dialogic pedagogies must be useful to teachers and students within a given culture or context, embodying the lived experience of those within that community. Freire eloquently exclaimed that people should not simply try to *make* his notions of dialogic pedagogy work in their new context, but rather people should *remake* his dialogic pedagogy to be meaningful for their cultural context (i.e., situated pedagogy). It is this goal of collaborative remaking of QT to meet the needs of the educators in a given context and culture that have steered our international work with scholars in South Africa, mainland China, and Switzerland, and as is evidenced by the remarkable scholarship in this volume, Taiwan.

4 Empirical Bases for Quality Talk

The initial conceptualization of the Quality Talk discussion model grew out of a series of empirical investigations exploring: (1) the characteristics of text-based classroom discussion approaches, including key instructional parameters, such as who leads the discussion (Wilkinson et al., 2019); (2) the effectiveness of the various approaches in promoting comprehension and critical thinking (Murphy et al., 2009); and (3) the nature of the discourse that unfolds during the enactment of each approach (Soter et al., 2008).

4.1 *Instructional Parameters in Classroom Discussion*

Discussion approaches can be characterized by a set of parameters that establish the instructional boundaries regarding its enactment (e.g., small-group or whole-class discussion). In essence, each parameter references a key decision that the researchers make about how discussions about text should transpire. Wilkinson et al. (2019) characterized the instructional parameters of nine discussion approaches that have undergone empirical testing (i.e., Collaborative Reasoning, Paideia Seminar, Philosophy for Children, Instructional Conversations, Junior Great Books Shared Inquiry, Questioning the Author, Book Club, Grand Conversations, and Literature Circles).

Thirteen specific parameters were analyzed for each of the aforementioned approaches, including (1) whether an expressive (i.e., gain a lived-through experience), efferent (i.e., gather information), or critical-analytic (i.e., weigh and evaluate the information presented) stance toward text (i.e., the goal for reading) is being promoted. It was also noted who (2) has interpretive authority, (3) controls turn taking, (4) sets the topic of discussion, (5) chooses the genre, (6) selects the specific text to be read, and (7) determines when reading actually occurs. The parameters also included (8) whether the structure is whole class or small group, (9) how groups are composed, (10) whether discussions are teacher or peer led, and (11) the degree of emphasis on the author's intentions. Wilkinson et al. found that the nine approaches varied the most in terms of their stance toward text, who is given interpretive authority, and who controls turn taking during discussion. Moreover, there appeared to be a relation between the predominant stance and whether teacher or students had interpretive authority or regulated turn taking. Specifically, discussions espousing an expressive stance were more likely to give greater control of discussion to the students, whereas approaches espousing an efferent stance were characterized by greater teacher control. What cannot be surmised from this detailed characterization that Wilkinson et al. proffered was whether the differences among discussion approaches were aligned with documented growth in students' text-based learning.

4.2 *Meta-Analysis of Discussion Approach Effectiveness*

As a complement to the Wilkinson et al. review (2019), Murphy et al. (2009) conducted an exhaustive meta-analysis of the effects of those nine discussion approaches on the frequency and duration of student and teacher talk and students' basic and high-level comprehension. A key finding derived from this meta-analysis was that while most discussion approaches were effective at promoting student talk and decreasing teacher talk, not all discussion approaches were effective at promoting high-level comprehension. That is, increases in students' talk were not necessarily accompanied by concomitant increases in students' comprehension or critical-analytic thinking. What appeared to be critical in enhancing students' high-level comprehension was not the frequency of student and teacher talk but the *kind* of talk that was occurring. Specifically, what was most associated with high-level comprehension was *shared control* of the discussion and interpretive authority between the teachers and students, and *productive talk*, which is talk that promoted critical analysis of text.

4.3 *Discourse Analysis of the Talk*

Subsequently, Soter et al. (2008) obtained discourse examples from the identified discussion approaches to analyze their discourse features, attempting to identify the specific discourse elements that characterize productive talk. After analyzing and evaluating the vast amount of discourse transcripts, the authors identified discourse features that serve as proximal indices of high-level comprehension. These discourse features included the use of open-ended authentic questions (i.e., questions with no pre-specified or expected, correct response), uptake of previous talk (i.e., a question that builds upon something a previous speaker said), individual and co-constructed explanations, and the presence of reasoning words (i.e., words thought to signal student reasoning like because, so, or if-then). Taken together, these empirical findings served as the foundation for the initial conceptualization of the QT discussion model.

5 The Quality Talk Intervention

As stated, the QT intervention is a teacher-facilitated approach to text-based discussions aimed at increasing students' critical-analytic thinking and reasoning *about*, *around*, and *with* text and content. As shown in Fig. 1, the QT intervention encompasses three interrelated dimensions: (1) a professional development (PD) model, (2) teacher professional competence, and (3) a discussion model.

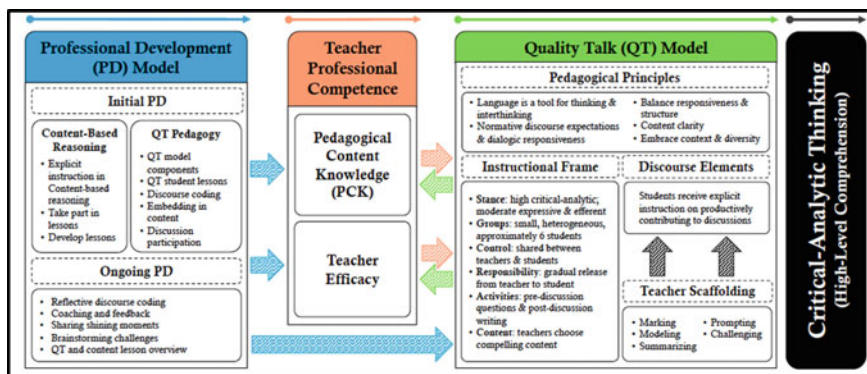


Fig. 1 Theoretical model of the QT intervention

As elucidated in the ensuing sections, these three dimensions interact reciprocally to promote students' critical-analytic thinking. Teachers receive initial professional development pertaining to content-based reasoning and the QT discussion model, which helps to establish teachers' initial competence for facilitating QT discussions in a given content area (e.g., chemistry or literacy). As teachers begin to implement the QT model and face the challenges associated with altering their approach to guiding instruction in a specific content domain, and their students work to modify the ways they interact with their teacher and their classmates through discussion, we provide teachers with individualized, ongoing professional development. The implementation of QT with ongoing support reciprocally enhances teachers' pedagogical competence and subsequently improves their discourse-intensive pedagogy. As teachers' discussion pedagogy transforms and their students become more accustomed to these new ways of interacting with each other around and with text and content, their ability to think critically and analytically undergoes development.

5.1 Professional Development Model

QT does not occur organically. For many teachers, engaging in QT discussions requires a significant change in how they conceptualize the role of classroom dialogue in teaching and learning (Wilkinson et al., 2007). As such, teachers often have to reconceptualize teacher and student roles and make corresponding shifts in their pedagogical practices when implementing QT. The QT professional development model was designed to support such shifts, and is comprised of two components: initial and ongoing professional development (for details of the professional development, see Murphy & Firetto, 2018; Murphy, Greene, & Butler, 2017; Murphy, Greene, & Firetto, 2018).

As displayed in Fig. 1, during the *initial professional development*, teachers become familiar with the QT discussion model, and learn how to implement the

model in their classroom. To aid in implementation, teachers are provided with a set of lessons plans and accompanying slide presentations (i.e., QT discourse lessons) that are used to teach students how to: (1) ask various types of questions, (2) make well-reasoned, justified responses, (3) meaningfully consider the positions of others, and (4) alter their positions when warranted based on the available evidence.

During this initial PD, teachers also learn how to analyze the quality of the talk that takes place during their small-group discussions using a tool called *DRIFT* (i.e., Discourse Reflection Inventory for Teachers). By learning how to code their discussions, teachers come to recognize when students' talk is reflective of critical-analytic thinking. Over time, this awareness enhances teachers' ability to facilitate more meaningful discussions by utilizing discourse moves—utterances that teachers make to ensure students are engaging in critical, reflective dialogue (e.g., prompting or challenging). Teachers take part in practice discussions with other teachers both in the role of facilitator and participant. This interactive practice helps teachers understand what it is like to lead and participate in QT discussions. Finally, teachers collaborate with our research team to explore better ways to infuse the QT intervention into their instructional environment and their lesson-based content (i.e., QT-enhanced lessons).

To further support teachers' pedagogical competence, we provide *ongoing professional development*, approximately once per month during implementation. During these sessions, discourse coaches (i.e., individuals trained in the QT intervention) and the teachers use *DRIFT* to examine a 10-min segment of a discussion video from the teacher's classroom. This form of coding and coaching provides a non-judgmental environment for teachers to assess the quality of their discussions, identify strengths of the discussions, engage in collaborative problem-solving, and set goals for future discussions. Ongoing professional development also provides teachers with opportunities to review upcoming QT and content lessons.

5.2 *Teacher Professional Competence*

Teachers' professional competence encompasses their pedagogical content knowledge and efficacy. Teachers' *pedagogical content knowledge* (PCK) is content knowledge that "goes beyond knowledge of subject matter per se to the dimension of subject matter knowledge for teaching" (Shulman, 1986, p. 9); that is, teachers' understanding of how to facilitate discussion-specific pedagogy in a particular academic domain (e.g., mathematics) with a certain group of students. Rooted in Bandura's (1977) self-efficacy theory, we understand teacher efficacy as teachers' perception of their ability to facilitate productive discussions in a given content area (Tschannen-Moran & Hoy, 2001). In our view, as teachers increase their PCK, they are increasingly able to perceive and codify meaningful patterns of talk, which allows them to successfully explain, model, and demonstrate productive talk as well as facilitate meaningful interactions with and between students and subsequently, along with

ongoing professional development, increases their efficacy. Indeed, there is convergent evidence that teachers' PCK and efficacy impacts students' learning during discussions (Murphy, Greene, & Butler, 2017; Murphy, Greene, Allen et al., 2018; Murphy, Greene, Firetto, 2018).

5.3 Discussion Model Components

The final dimension of the intervention is the QT discussion model (Fig. 1). The QT discussion model consists of four components: instructional frame, discourse elements, teacher scaffolding, and a set of pedagogical principles. The *instructional frame* gives prominence to a critical-analytic stance supported by moderate levels of the expressive and efferent stances. Teachers and students share control of the discussion with teachers choosing compelling texts and content while gradually releasing control of the discussion to students, affording students interpretive authority and control of turn taking. Students also participate in pre-discussion activities (e.g., generating questions, scientific models, or main ideas). As part of the instructional frame, discussions take place in small, heterogenous groups.

Discourse elements refer to the indicators of productive talk within students' verbal interactions. For instance, during productive discussions students pose authentic questions about, around, and with the text and content that are meaningful to them and that elicit high-level thinking (e.g., generalization, analysis, or speculation) as well as forge affective and intertextual connections. During productive discussions students also ask questions that build on what has already been said (i.e., *uptake*) and engage in argumentation to explain and justify their thinking while also challenging others' reasoning, evidence, or justifications. During the intervention, teachers implement a set of discourse-specific lessons designed to bolster students' discursive skills including how to ask and respond to questions. Over time students internalize productive discursive practices about text and content including how to activate relevant content knowledge, scrutinize sources of reasoning and evidence, justify their thinking, or modify their understandings to accommodate new or refined knowledge.

The third component, *teacher scaffolding*, emphasizes a set of moves (i.e., marking, modeling, summarizing, prompting, and challenging) that teachers can use to facilitate productive talk during QT discussions. *Pedagogical principles*, the fourth component, refers to a set of guiding principles that provide a foundation for fostering a discursive environment that empowers students' perspectives and ideas. Foremost among these are: recognizing language as a tool for thinking and inter-thinking, setting normative discourse expectations that balance responsiveness and structure during discussion (i.e., discussion rules), establishing shared responsibility and interpretive authority, and embracing context and diversity. Together these four components establish the foundation for a dialogic community within the classroom

where teachers and students possess the knowledge of how to take part in content-based productive discussions that lead to deeper, more meaningful thinking and reasoning.

6 Quality Talk Implementation

Over the last 15 years, we have collaborated with teachers and other educational stakeholders to implement the QT intervention in a multitude of settings that varied in school type, teacher experience, content area, student age, language, socioeconomic strata, culture, and continent, which are key aspects to the context of implementation. As Shor and Freire (1987) suggested, it has been necessary to collaborate with key educational stakeholders to “remake” aspects of the QT intervention such that it is useful and sustainable in a given context. Through this collaborative remaking, however, we also found that some aspects of QT implementation are fundamental to the success of the intervention. With this section, we highlight what we perceive as core aspects of QT intervention implementation procedures as well as how implementation has varied to meet the needs of teachers and students across different contexts.

Within our program of research, we have implemented QT in multiple domains following a set of procedures central to the QT intervention approach (see Fig. 2). For instance, initial and ongoing professional development was present in all of our studies. During professional development, teachers were able to acquire QT pedagogy that informed the knowledge, understanding, and enactment of the multi-faceted teacher and student roles as the intervention unfolded. Next, QT discussion lessons and texts or QT-enhanced content lessons were used as teachers delivered content necessary for students to bolster their knowledge of discourse practices as an engaged learner. Every implementation of the intervention, encouraged teachers to use some form of instructional materials to scaffold students’ participation in the discussion (i.e., pre-discussion activities: writing questions about the text or activity), establish and reinforce normative expectations for discussion (i.e., ground rules like “if we don’t understand we ask ‘why’”), and craft activities that encourage independent examination of their understanding (i.e., post-discussion activity: written response to a thought-provoking, content-related question). Finally, it was fundamental that students take part in a sufficient number of facilitated discussions to allow for the

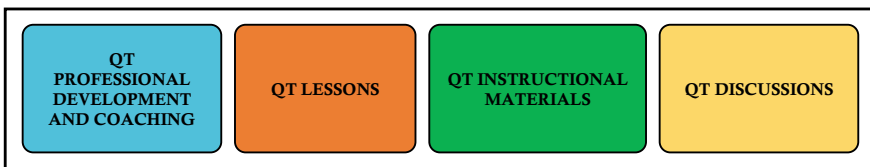


Fig. 2 Key implementation procedures for QT

acquisition of the discourse skills and the epistemic abilities (e.g., critical, reflective thinking). Our own experience has been that teachers and students must take part in at least 10 discussions, in conjunction with teacher professional development and students' explicit instruction in QT discourse elements, to maximize teachers' professional competence and students' critical-analytic thinking and reasoning. For QT interventions implemented in the content domains of language arts and science as well as multilingual contexts, we highlight the "remaking" of the QT intervention by showcasing how the content of the domain was interwoven into the QT approach.

6.1 Language Arts

Our QT elementary language arts projects included a series of QT writing lessons to align with the instructional goals and teachers' needs in the context of language arts. Students utilized QT literacy journals with vocabulary activities as well as scaffolds and graphic organizers to practice their writing of various genres (e.g., argumentative or comparative). Indeed, a promising transfer effect of the QT intervention is its influence on students' written argumentation (Firetto et al., 2019; Long et al., 2014; Wei et al., 2019). After receiving explicit QT writing lessons, students become more familiar with these argumentation components and how they can be represented in the written form. In so doing, students enhance oral argumentation as well as written argumentation about discussed and non-discussed or novel texts.

6.2 Science

Although QT was originally conceptualized for use in language arts instruction, the intervention has also been "remade" for high-school science. A recontextualization of QT for high-school physics and chemistry learning was accomplished through the revision of the QT lessons on discourse elements. These QT lessons, initially designed for language arts, were subsequently modified to include science-specific content and examples for physics and chemistry students. Further, QT science implementation also incorporated QT-enhanced science lessons that emphasize the importance of model building and reasoning in teaching scientific concepts and phenomena. Instead of using QT literacy journals, a QT catalyst was designed and developed as a way to prepare students for discussions with places to write authentic questions, record observations from experiments, and organize their scientific arguments.

6.3 *Multilingual Contexts*

As QT has been implemented in various multilingual contexts such as South Africa, Taiwan, and mainland China across an array of domains, recontextualizations specific to QT implementation were prevalent (see other chapters in this volume for examples regarding QT implementation in Taiwan). An example would be the training of student discussion leaders in South Africa and mainland China. In these two contexts, classroom resources were limited due to large classes. A consequence is that the teacher cannot sit with each discussion group to facilitate their discussion. Therefore, to ensure effective implementation of QT discussions, student discussion leaders were trained to help facilitate their respective discussion group. In the study conducted in mainland China, periodic feedback was also provided to student discussion leaders to help them *transform* into effective facilitators in their group. Another recontextualization essential to these multilingual contexts is based on the fact that students' limited language proficiency in the target language may impede their participation in QT discussions. In fact, in the study conducted in mainland China, QT discussions were conducted in two languages, namely Mandarin and English with Mandarin-speaking eighth-grade students in their English learning classroom. The discussions took place alternately during the intervention, making it easier for low-English proficiency students to adjust to the climate of small-group discussion and engage as best as they could (Wei, 2019; Wei & Murphy, 2019; Wei et al., under review). Similarly, in South Africa, code switching and students scaffolding language for each other was encouraged (Murphy, 2018).

7 Empirical Support for the Quality Talk Intervention

As described in the previous sections, the QT discussion model was developed based on empirical results of the most effective classroom practices for fostering productive discussion. Since its inception, QT has been implemented in a variety of domains and cultural contexts, where the components of QT model were stressed and followed. The findings from these studies have been used to further refine and recontextualize QT to fit the aims and perspectives appropriate for each setting. For example, when first implemented in elementary language arts classrooms for the purpose of promoting high-level comprehension, we tested the effectiveness of QT to improve comprehension. In that study QT was compared to the TWA reading strategy (Mason, 2013) and to a hybrid of the two (Li et al., 2016). Results indicated that students participating in the QT intervention and hybrid approach showed promising gains in oral reading fluency and individual reading comprehension, measures indicative of basic and high-level comprehension, while students in the TWA condition did not. Further, students in the QT and hybrid conditions both showed growth in the number of authentic questions asked and in the number of elaborated explanations posed and

exhibited significantly more discourse elements than students in the TWA condition. These results suggested that the design of QT with its emphasis on questions that instigate critical-analytic thinking and on shared interpretive authority played a significant role in facilitating students' comprehension development.

Building from these findings, a second QT language arts study examined the effects of homogeneous versus heterogeneous ability grouping on students' reading comprehension (Murphy, Wilkinson et al., 2017). Students were grouped in either heterogeneous or homogeneous low-, middle-, and high-ability groups to participate in QT discussions. Overall results were consistent with previous findings in that QT significantly increased students' basic and high-level comprehension. Moreover, students in heterogeneous groups experienced, on average, greater gains in high-level comprehension than those in homogeneous groups. Interestingly, low-ability students displayed the greatest gains in basic comprehension, even outpacing high-ability students, although their gains in high-level comprehension were the lowest. An examination of student and teacher discourse revealed that low-ability students in homogeneous groups tended to ask questions *about* the text rather than questions *around* or *with* the text. Teachers also tended to facilitate these groups differently in ways that likely reinforced this orientation toward discussion. In effect, when working with the low-ability groups, teachers' prompts or challenges were focused on the explicit meaning of the text, whereas with high-ability students those prompts and challenges reached beyond the literal text to critical questions about that textual content or what it implied.

In a last, quasi-experimental study focused on QT in elementary language arts, Murphy, Greene, Firetto et al. (2017) examined the effects of students' participation in QT compared to students receiving a literacy intervention with a strong empirical record of effectiveness in increasing students' comprehension and writing (i.e., Guided Reading Intervention and Leveled Literacy Intervention [LLI]; Fountas & Pinnell, 2010, 2017). Results indicated that while all participants showed growth in high-level comprehension during the first half of the implementation, only QT treatment students continued to grow over the second half of the implementation. Further, teacher feedback indicated that they strongly believed in QT as a method for increasing students' critical-analytic thinking in language arts, and that they saw QT as a viable intervention for other content areas. As with those participating teachers, we had come to recognize the potential for QT in other academic subjects, as well as with older students, and had undertaken studies in high-school chemistry and physics classrooms.

Specifically, we set out to test the effectiveness of QT in fostering high-school students' discussion patterns, conceptual understanding, and written argumentation in chemistry and physics classes (Murphy, Greene, Allen et al., 2018). What we found was that students in the treatment group asked more authentic questions, their responses were more elaborate and informative (i.e., elaborate explanations), they verbally collaborated with group members to achieve deeper understanding (i.e., cumulative talk), and were more likely to challenge or counter the remarks of others (i.e., exploratory talk). Students receiving the QT intervention also manifested more indicators of critical-analytic thinking in their discourse, and showed more substantial

improvement in their written argumentation than non-QT students. Specifically, the QT students were able to craft higher-quality, scientifically accurate arguments to support their understanding of scientific phenomena than their non-QT peers.

In addition to results indicating the positive effects of QT on students' productive discourse and ability to engage in scientific argumentation, an analysis of teacher discourse from the quasi-experiment revealed that incidence of treatment teacher questions and teacher moves decreased over time, while comparison teacher discourse displayed no such changes, and in fact asked more test questions at posttest (Murphy, Greene, Allen et al., 2018). This underscores the importance of not only initial but also ongoing professional development in supporting teachers' ability to effectively facilitate student discussions. It is also important to note, however, that treatment teachers did utilize a relatively high number of questions and teacher moves even at posttest, which highlights the challenges of implementing QT with struggling learners. These students have little experience with science learning environments in which they are asked to actively participate in scientific practices and construct their own understanding. As such, teachers' professional vision for cultivating productive discourse with low-achieving students must be nurtured in order to ensure that students' contributions to discussion are not devaluated while also ensuring that their understanding is aligned with normative science explanations (Schneider & Plasman, 2011).

Another study examining QT science discussions indicates that teacher presence has an additional impact upon the discussion groups' social regulation of learning (Dragnic-Cindric et al., 2018). Small-group discussions with intermittent versus full teacher presence were compared for student engagement and regulation of learning, with results suggesting that teacher presence moderated students' engagement with each other and their participation in group-level regulation. For example, when teachers were fully present for a discussion, they were likely to set goals for the group and monitor progress throughout the discussion; however, without the teacher present, students had the opportunity to take on these roles for themselves. The findings indicate that teachers' regulation of group processes may also be important to discuss during initial professional development and ongoing coaching.

As QT has expanded into international settings, the intervention has been recontextualized to meet the needs of different academic contexts and cultures. In an effort to build collaboration and foster participatory action in recontextualizing the QT intervention for use in a remote, rural South African school setting, we conducted a yearlong descriptive case study of the literacy practices in three secondary school English language classrooms. During this study, we identified a number of constraints in the context that would likely influence the success of the QT intervention including "teaching and learning resources, class size and teacher workload, limited teacher training, insufficient support for teachers and a mismatch between the national curriculum and assessment guidelines" (Sefhedi, 2019, p. 207). Although the teacher in this study valued the pedagogical principle of talk as a tool for thinking and interthinking, she struggled to overcome the traditional culture of pedagogy in which education is enacted through the transmission of knowledge. Much like Freire's

(2000) banking concept of education, the teacher was seen as the depositor of knowledge and the student was tasked with making withdrawals. Other challenges were that the students did very little reading or writing in English or speaking in class. However, we also found that there were a number of factors that would enable the teachers and, consequently, the QT intervention to be resilient in the face of such constraints. For example, supportive and knowledgeable school leadership was identified as essential to meeting the needs of a teacher attempting to implement QT, teachers' enthusiasm for altering their pedagogy to help their students, students' eagerness to learn how to engage in critical-analytic talk, as well as strong relationships between the researchers and teachers (Leask, 2019).

Initial results from our ongoing implementation of the QT intervention in a low-resourced rural school in South Africa appear promising with dramatic decreases in teacher talk, dramatic increases in student talk, and descriptive gains in comprehension outpacing a comparison classroom (Leask, 2019). As one student noted, QT altered the dialogic culture in the classroom: "...when Mam [teacher] was teaching us because I was afraid to raise a hand and tell Mam that I don't understand somewhere but now with my group I can tell them that guys, help me I don't understand here..." (Leask, 2019, Appendix E. 7: Interview, L40). Perhaps most telling, however, are the teachers' and students' expressions regarding how QT was different from their prior instruction and how it changed the learning the classroom: "It is different because we...in Quality Talk we ask certain questions and the other way that we used to learn is just, we read the story and read the question, go back to the story that's the way we used to understand the story so with QT we go deeper, relate the story with the outside world and yha [sic] that's it" (Leask, 2019, Appendix E.7: Interview, L19). A clear take-away from our work in South Africa is that the compatibility of QT with the current classroom culture is essential to bringing about change in teachers and students.

In mainland China, QT was implemented with a group of native Mandarin-speaking eighth-grade students taking English language classes (Wei, 2019). In a quasi-experimental study examining the effect of QT on Mandarin-speaking students' English language proficiency (i.e., reading, writing, listening, and speaking), students in the treatment condition participated in a total of ten QT discussions: five in Mandarin, and five in English. Results showed that the implementation of QT did not significantly impact students' English reading, listening, and speaking. It is possible that increasing the number of discussions in English may have led to significant findings in this area, as our own research has shown that students participate in at least 10 discussions in the target language in order to see improvement in the quality of the talk (Murphy & Firetto, 2018). Notably, the study revealed that the QT intervention had positive effects on the quality and quantity of students' written argumentation in English, particularly their ability to craft written arguments in a literacy journal. These findings suggest that QT may be a fruitful intervention approach to improve students' written argumentation skills even in the context of foreign language learning.

Finally, despite the clear need for recontextualization of the QT intervention approach to ensure successful implementation in a given cultural setting, a study

comparing QT outcomes from the United States, South Africa, and mainland China suggests that there are marked similarities between the progression of QT discussions in all three contexts (Croninger et al., 2018). One example of this is teacher and student talk patterns. At baseline, teachers control the discussion and ask the majority of the questions. As the implementation progresses, however, students generally take on more interpretive authority, so that by the final discussion, students are asking the majority of the questions and are interacting directly with each other as opposed to just the teacher. Additionally, student talk tends to become more sophisticated over time, with students gradually increasing their use of evidence and reasoning to support their conclusions; by the end of the intervention, students are often engaged in sophisticated talk moves such as using counterarguments and rebuttals as they interact with peers. It is also interesting to note similarities between South Africa and mainland China not present in the United States, such as the occurrence of students' code switching when engaging in sophisticated discourse that requires critical-analytic thinking.

Moreover, we have every reason to believe that similar results will emerge from our esteemed Taiwanese collaborators who take part in "remaking" QT to optimize its utility for their college-level students in their English-language learning classes. Indeed, as these scholars will describe in this volume, in some cases the remaking gave way to impressive changes in students' critical-analytic thinking and reasoning as evidenced in their dialogue and their written responses. In other cases, more "remaking" of QT will be necessary to achieve the long-term goals of the larger university community. In turn, it is our intention to explore ways that what is learned from the contextualizations and varied instantiations of QT can inform future uses of the pedagogy in our own communities.

8 Summary and Conclusion

What is overtly clear from the available empirical findings is that QT works. Regardless of the content area (e.g., elementary language arts or high-school science), school (e.g., rural), or culture (e.g., South Africa or mainland China), implementation of QT fosters students' critical, reflective discussion and transactions about, around, and with text and content. While there are likely a number of factors contributing to the success of QT, we would like to highlight just a few. QT worked in such diverse contexts because we collaborated with teachers, invoking their knowledge of their students, content area, school, and community, to flexibly yet methodically "remake" QT to fit the needs and nature of the educational context, including what counts as knowledge and knowing (Shor & Freire, 1987). QT worked because teachers provided explicit instruction in discussion and gradually released responsibility and interpretive authority to students as they worked to co-construct understanding through critical, reflective discussion. QT worked because it provided a forum where students could collectively shake each other's ideas, beliefs, and understandings against one another and test their rigidity (Dewey, 1916; Freire, 2000;

Vygotsky, 1978). Finally, it worked because teachers abandoned what Freire (2000) referred to as a banking concept of pedagogy in favor of a problem-posing pedagogy where the responsibility for transacting with text and content lies both with teachers and students. Moreover, we have every reason to believe that participation in QT will have the long-term effects that Freire (2000) called for in his writings. That is, ultimately, participation in QT will give way to classroom communities in which teachers and students engage in critical, reflective dialogue that transforms reality. What follows are the highlights of this chapter:

- To successfully implement a discourse-intensive pedagogical approach such as Quality Talk, it is essential that researchers form a collaborative partnership with the teachers to recontextualize the intervention in accordance with the context of classroom, domain, community, and culture.
- To help students successfully conduct productive discussions, teachers need to provide explicit student instruction on how to formulate thought-provoking questions and reasoned arguments and gradually release responsibility and interpretative authority to students during discussions.
- To ensure the effect of small-group discussions on promoting students' thinking, it is crucial that such reflective discourse takes place in an open participation mode and with the understanding that knowledge lies in the transaction between students and the text or content rather than the transmission of information from teachers to students.
- As teachers recontextualize Quality Talk intervention for a given domain or culture, they may consider adapting the materials for explicit instruction, pre- and post-discussion activities as well as texts or content selected for discussions to ensure they are domain- or culture-relevant.
- With respect to specific classroom context such as large classes, teachers may assign student discussion leaders to facilitate respective small-group discussion. Notably, student discussion leaders also need feedback and coaching such as teacher modeling of effective discourse moves to facilitate a productive student discussion.
- In a school or cultural environment where open participation mode of instruction is rare, it is important that school leaders and teachers recognize the importance of students engaging in critical and reflective dialogue and consider using discourse-intensive approaches to transform teacher and student talk in the classroom.

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References

- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191–215. <https://doi.org/10.1037/0033-295x.84.2.191>.
- Beck, I. L., & McKeown, M. G. (2006). *Improving comprehension with Questioning the Author: A fresh and expanded view of a powerful approach*. New York: Scholastic.
- Cobb, P. (1999). Individual and collective mathematical development: The case of statistical data analysis. *Mathematical Thinking and Learning*, 1(1), 5–43. https://doi.org/10.1207/s15327833mtl0101_1.
- Cooley, C. H. (1922). *Human nature and the social order* (Rev. ed.). Charles Scribner's Sons (Original published in 1902).
- Croninger, R. M. V., Murphy, K. P., Firetto, C., Li, M., Wei, L., & Baszczewski, S. E. (2018, August). *Facilitating small-group discussions: Effect of teacher discourse moves across ability groups in fourth grade*. Poster presented at the annual meeting of the American Psychological Association, San Francisco, CA.
- Dewey, J. (1916). *Essays in experimental logic*. Chicago University Press.
- Dragnic-Cindric, D., Lobczowski, N. G., Greene, J. A., & Murphy, P. K. (2018, June). Exploring teacher presence during social regulation of learning in science classrooms. *Proceedings of International Conference of the Learning Sciences, ICLS*, 3, 1631–1632.
- Firetto, C. M., Murphy, P. K., Greene, J. A., Li, M., Wei, L., Montalbano, C., Hendrick, B., & Croninger, R. M. V. (2019). Bolstering students' written argumentation by refining an effective discourse intervention: Negotiating the fine line between flexibility and fidelity. *Instructional Science*, 47(2), 181–214. <https://doi.org/10.1007/s11251-018-9477-x>.
- Fonseca, B., & Chi, M. T. H. (2011). The self-explanation effect: A constructive learning activity. In R. E. Mayer & P. A. Alexander (Eds.), *The handbook of research on learning and instruction* (pp. 296–321). Routledge Press. <https://doi.org/10.4324/9780203839089..>
- Fountas, I. C., & Pinnell, G. S. (2010). *Leveled literacy intervention: System overview a comprehensive look at the LLI systems*. Heinemann.
- Fountas, I. C., & Pinnell, G. S. (2017). *Guided reading: Responsive teaching across the grades*. (2nd ed.). Heinemann.
- Freire, P. (1998). *Teachers as cultural workers: Letters to those who dare teach*. Westview Press.
- Freire, P. (2000). *Pedagogy of the oppressed*. (30th anniversary). Continuum.
- Greene, J. A., Sandoval, W. A., & Bråten, I. (2016). Introduction to epistemic cognition. In J. A. Greene, W. A. Sandoval, & I. Bråten (Eds.), *Handbook of epistemic cognition*. (pp. 1–15). Routledge.
- Hatano, G., & Inagaki, K. (2013). *Essays in developmental psychology: Young children's naïve thinking about the biological world*. Psychology Press. <https://doi.org/10.4324/9780203759844>.
- Leask, M. (2019). *Enablers and constraints to intervention in a remote, rural South African school context* (Unpublished doctoral dissertation). University of Pretoria, Pretoria, South Africa.
- Li, M., Murphy, P. K., Wang, J., Mason, L. H., Firetto, C. M., Wei, L., & Chung, K. S. (2016). Promoting fourth- and fifth-grade students' reading comprehension and critical-analytic thinking: A comparison of three instructional approaches. *Contemporary Educational Psychology*, 46, 101–115. <https://doi.org/10.1016/j.cedpsych.2016.05.002>.
- Long, V. A., Firetto, C. M., & Murphy, P. K. (2014, August). *Transfer effects from small group discussions of text to writing*. Poster presented at the annual convention of the American Psychological Association, Washington, DC.
- Marx, K., & Engels, F. (2004). *Communist manifesto*. (L. M. Findley, Trans.). Broadview Press Ltd.
- Mason, L. H. (2013). Teaching students who struggle with learning to think before, while, and after reading: Effects of SRSD instruction. *Reading and Writing Quarterly*, 29(2), 124–144. <https://doi.org/10.1080/10573569.2013.758561>.
- McKeown, M. G., Beck, I. L., & Blake, R. G. K. (2009). Rethinking reading comprehension instruction: A comparison of instruction for strategies and content approaches. *Reading Research Quarterly*, 44(3), 218–253. <https://doi.org/10.1598/rrq.44.3.1>.

- Mehan, H. (1979). *Learning lessons*. Harvard University Press.
- Murphy, P. K. (2007). The eye of the beholder: The interplay of social and cognitive components in change. *Educational Psychologist*, 42(1), 41–53. <https://doi.org/10.1080/00461520709336917>.
- Murphy, P. K. (Ed.). (2018). *Classroom discussions in education: Promoting productive talk about text and content*. Routledge.
- Murphy, P. K., & Firetto, C. M. (2018). Quality Talk: A blueprint for productive talk. In P. K. Murphy (Ed.), *Classroom discussions in education: Promoting productive talk about text and content*. (pp. 101–134). Routledge.
- Murphy, P. K., Greene, J. A., Allen, E. M., Baszczewski, S., Swearingen, A. K., & Butler, A. M. (2018). Fostering high school students' scientific argumentation and conceptual understanding through Quality Talk discussions. *Science Education*, 102(6), 1239–1264. <https://doi.org/10.1002/sce.21471>.
- Murphy, P. K., Greene, J. A., & Butler, A. (2017). *Integrating Quality Talk professional development to enhance professional vision and leadership for STEM teachers in high-need schools* (Tech. Rep. No. 4). The Pennsylvania State University.
- Murphy, P. K., Greene, J. A., & Firetto, C. M. (2018). *Quality Talk: Developing students' discourse to promote critical-analytic thinking, epistemic cognition, and high-level comprehension* (Tech. Rep. No. 5). The Pennsylvania State University.
- Murphy, P. K., Greene, J. A., Firetto, C. M., Li, M., Lobczowski, N. G., Duke, R. F., Wei, L., & Croninger, R. M. V. (2017). Exploring the influence of homogeneous versus heterogeneous grouping on students' text-based discussions and comprehension. *Contemporary Educational Psychology*, 51, 336–355. <https://doi.org/10.1016/j.cedpsych.2017.09.003>.
- Murphy, P. K., Wilkinson, I. A. G., Soter, A. O., & Firetto, C. M. (2017). Instruction based on discussion. In R. Mayer & P. A. Alexander (Eds.), *Handbook of research on learning and instruction*. (2nd ed., pp. 432–459). Taylor & Francis.
- Murphy, P. K., Wilkinson, I. A. G., Soter, A. O., Hennessey, M. N., & Alexander, J. F. (2009). Examining the effects of classroom discussion on students' high-level comprehension of text: A meta-analysis. *Journal of Educational Psychology*, 101(3), 740–764. <https://doi.org/10.1037/a0015576>.
- Palmer, J. A. (2001). *Fifty major thinkers on education: From Confucius to Dewey*. Routledge.
- Raphael, T. E., & McMahon, S. I. (1994). Book Club: An alternative framework for reading instruction. *The Reading Teacher*, 48, 102–116. <https://doi.org/10.1598/rt.48.2.1>.
- Schneider, R. M., & Plasman, K. (2011). Science teacher learning progressions: A review of science teachers' pedagogical content knowledge development. *Review of Educational Research*, 81(4), 530–565. <https://doi.org/10.3102/0034654311423382>.
- Sefhedi, S. T. (2019). *Promoting critical-analytic thinking through teacher discourse moves and pedagogical principles in a rural school* (Unpublished doctoral dissertation). University of Pretoria, Pretoria, South Africa.
- Shulman, L. S. (1986). Those who understand: Knowledge growth in teaching. *Educational Researcher*, 15(2), 4–14. <https://doi.org/10.3102/0013189x015002004>.
- Shor, I., & Freire, P. (1987). What is the 'dialogical method' of teaching? *The Journal of Education*, 169(3), 11–31. <https://doi.org/10.1177/002205748716900303>.
- Soter, A. O., Wilkinson, I. A. G., Murphy, P. K., Rudge, L., Reninger, K., & Edwards, M. (2008). What the discourse tells us: Talk and indicators of high-level comprehension. *International Journal of Educational Research*, 47(6), 372–391. <https://doi.org/10.1016/j.ijer.2009.01.001>.
- Tschannen-Moran, M., & Hoy, A. W. (2001). Teacher efficacy: Capturing an elusive construct. *Teaching and Teacher Education*, 17(7), 783–805. [https://doi.org/10.1016/S0742-051X\(01\)00036-1](https://doi.org/10.1016/S0742-051X(01)00036-1).
- Vygotsky, L. S. (1978). *Mind in society: The development of higher mental psychological processes*. Harvard University Press.
- Wei, L. (2019). *Promoting English language proficiency through Quality Talk: An intervention with Mandarin-speaking students* (Unpublished doctoral dissertation). The Pennsylvania State University: University Park, PA.

- Wei, L., Firetto, C. M., Murphy, P. K., Li, M., Greene, J. A., & Croninger, R. M. V. (2019). Facilitating fourth-grade students' written argumentation: The use of an argumentation graphic organizer. *The Journal of Educational Research*, 112(5), 627–639. <https://doi.org/10.1080/00220671.2019.1654428>.
- Wei, L., & Murphy, P. K. (2019). Recontextualising discourse-intensive interventions for multilingual contexts: Implementing *Quality Talk* in China. In M. F. Omidire (Ed.), *Multilingualism in the classroom*. (pp. 57–81). UCT Press.
- Wei, L., & Murphy, P. K. (2018). Teacher and student roles: Walking the gradually changing line of responsibility. In P. K. Murphy (Ed.), *Classroom discussions in education: Promoting productive talk about text and content*. Routledge.
- Wei, L., Murphy, P. K., Wu, S. (under review). Recontextualization of Quality Talk: Implementation of small-group discussions in an eighth-grade English classroom in mainland China. Invited paper submitted to *ECNU (East China Normal University) Review of Education (Special Issue)*.
- Wells, G. (1989). Language in the classroom: Literacy and collaborative talk. *Language and Education*, 3(4), 251–273. <https://doi.org/10.1080/09500788909541266>.
- Wells, G. (2007). Semiotic mediation, dialogue, and the construction of knowledge. *Human Development*, 50, 244–274. <https://doi.org/10.1159/000106414>.
- Wilkinson, I. A. G., Soter, A. O., & Murphy, P. K. (2007). *Group discussions as a mechanism for promoting high-level comprehension of text: Final grant performance report* (PR/Award No. R305G020075). Columbus, OH: Ohio State University Research Foundation.
- Wilkinson, I. A. G., Soter, A., Murphy, P. K., & Lightner, S. C. (2019). Dialogue-intensive pedagogies for promoting literate thinking. In N. Mercer, R. Wegerif, & L. Major (Eds.), *The Routledge international handbook of research on dialogic education*. (pp. 320–335). Routledge.