Creating Opportunities for Discussion in a Seventh Grade ELA/Social Studies Classroom in an Urban Middle School

By

Jin-Sil Mock

Dissertation
Submitted to the Faculty of the
Graduate School of Vanderbilt University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY
in
Learning, Teaching, and Diversity

September 30, 2018

Nashville, Tennessee

Approved:

David K. Dickinson, Ed.D.
Kathy Ganske, Ph.D.
Deborah Wells Rowe, Ph.D.
Virginia Scott, Ph.D.

ACKNOWLEDGEMENTS

First and foremost, I would like to thank my academic advisor, David Dickinson. I could not have completed this dissertation without your constant support. You encouraged me to pursue my interest, challenged and refined my thinking, and helped me find my voice as a researcher. I am sorry for the anxiety I might have caused by taking so long to complete my dissertation revisions. I feel honored and fortunate to have been able to receive feedback on my work from you! I greatly appreciate the advice, expertise, and encouragement of my dissertation committee members, Kathy Ganske, Deborah Rowe, and Virginia Scot as well. I would also like to thank Lisa who so generously opened up her classroom and volunteered to be a part of the research project.

I am immensely thankful for the lifelong friends I have made on this journey. I especially thank my academic sisters, Katherine Newman and Liz Hadley. Without your friendship, I would not have been able to survive graduate school. I hope we can all get together one day and celebrate.

Finally, I would like to thank my family. I would like to thank my parents for providing me with unconditional love and support and inspiring me to pursue my dreams even if it meant living across the world. Last but not least, I would like to thank my husband, Frank, who believes it is his duty as a husband to read my dissertation at least once. Thank you so much for being the source of encouragement and laughter. I am sorry about the many weekends we had to stay in, because I had to work on my revisions. We can go to Disneyland now!

TABLE OF CONTENTS

LIST OF TABLES

Table Page

LIST OF FIGURES

Figure

v

Chapter I

INTRODUCTION

The need to provide support for students' development of academic language, language used in academic settings to acquire and demonstrate knowledge, has been receiving growing attention in recent years for students who are English language learners as well as native speakers of English. Students need to be able to navigate through the distinct lexical and grammatical features of academic language in order to be successful in school (Anstrom et al., 2010; Nagy & Townsend, 2012; Scarcella, 2003; Shanahan & Shanahan, 2008; Snow & Uccelli, 2009). The middle school years are when academic language skills become especially important because the materials students are expected to read and write become increasingly distanced from ordinary language (Christie, 2002; Fang, Schleppegrell, & Cox, 2006). A growing number of empirical studies support the significance of students' academic language skills for various aspects of academic achievement such as understanding of content area concepts, reading comprehension, and overall academic achievement (Cunningham & Moore, 1993; Lawrence, Capotosto, Branum-Martin, White, & Snow, 2012b; Lesaux, Crosson, Kieffer, & Pierce, 2010; MacGregor & Price, 1999; Snow, Lawrence, & White, 2009; Townsend, Filippini, Collins, & Biancarosa, 2012).

Classroom discussion can be a powerful tool for supporting student learning as well as academic language development because of the opportunities it provides for students to use language in a meaningful way (Hynds & Rubin, 1990; Lemke, 1990; Lindfors, 1990).

A number of studies have shown the effects of discussion particularly in ELA and social studies classroom (Applebee, Langer, Nystrand, & Gamoran, 2003; Gamoran & Nystrand, 1991; Nystrand & Gamoran, 1991). Despite the strong evidence supporting discussion in the classroom, observational studies show that discussion is not a regular part of classroom instruction. Students are not given many opportunities to speak in class and classroom talk is often dominated by teachers (Applebee et al., 2003; Cazden, 1988; Long & Porter, 1985; Nystrand, 1997; Nystrand & Gamoran, 1991). In addition, the language demands placed upon students are often narrow where students are seldom asked to use language for advanced functions such as formulating questions and making predictions (Barnes, 1990). Rather, when students are asked to participate, their engagement is mostly procedural, dealing with classroom rules and regulation or recalling what the teacher said (Barnes, 1990; Nystrand & Gamoran, 1991). The lack of support for academic language development is especially problematic for students who come from low SES and language minority backgrounds, who may have little opportunity for exposure to academic language outside of school (Schleppegrell, 2011).

This study took place in one seventh grade English language arts and social studies integrated class in an urban middle school. The purpose of the study was to examine the effects of an academic language intervention that promoted the students' participation in academic discussion. The study examined the changes in the classroom discourse quality and the students' learning of the taught vocabulary words, in relation to the teacher and students' participation in the intervention.

The research questions for the study were the following:

1. Were there changes in the classroom discussion quality related to the implementation of the intervention?

2. Did students learn the taught vocabulary words, and was the learning related to the observed patterns of classroom discussion?

In the next chapter, I discuss the relevant literature that helped shape the design of the study. In Chapter 3, I describe the research context, including the observations made prior to the present study. In Chapter 4, I discuss the design of the pilot study, including its design, the data collection, data analysis methods, and the results, which then guided the design of the intervention study. In Chapter 5, I present the design of the intervention study and its two phases including the data collection, data analysis methods, and results.

Chapter II

REVIEW OF THE LITERATURE

Academic Language

The construct of academic language has evolved from academic descriptions of how language is used in ways that attend to social contexts and participants, to a major topic of concern for educators today. Academic language contains a constellation of specialized lexical and grammatical features that have developed as people collectively engage in activities that require them to use language to achieve different intellectual tasks (Schleppegrell, 2002). One way academic language differs from every day use of language is in its choice of words. Academic vocabulary is an aspect of academic language that has received the most attention because academic word knowledge has consistently been identified as a key ingredient for academic success (Corson, 1997; Snow, Porche, Tabors, & Harris, 2007; Townsend et al., 2012).

In addition to the use of academic vocabulary, academic texts use specialized grammatical structures that create texts that are lexically dense, abstract, and authoritative (Halliday, 1989; Nagy & Townsend, 2012; Schleppegrell, 2006; Snow & Uccelli, 2009). Students are not familiar with these less-intuitive grammatical constructions that give agency to complex processes and abstract concepts, making it difficult for them to understand the main point of the text (Martin, 1993; Snow & Uccelli, 2009). Just as academic texts have special lexical and grammatical features, oral language in academic settings, since it is used to accomplish intellectual tasks, also has functions different from

that of everyday language (Bailey, 2007; Zwiers, 2008). Therefore, academic success requires not only proficiency in discipline-specific knowledge (e.g. knowing the conventions for long division) but also in general academic discourse practices (e.g. being able to demonstrate understanding clearly in any content area) (Bailey, 2007; Hirai, Borrego, Garza, & Kloock, 2009).

Effects of Student Participation in Academic Discussion

Engaging students in classroom discussion can be a powerful tool for fostering their academic language development in content areas because talking allows students to make sense of the material they are learning in personally meaningful ways (Hynds & Rubin, 1990; Lemke, 1990; Lindfors, 1990). A meta-analysis examining the benefits of various classroom discussion approaches revealed that engaging students in discussions produced a strong increase in the amount of student talk and a reduction in teacher talk (Murphy, Wilkinson, Soter, Hennessey, & Alexander, 2009). Engaging students in discussions can be a great way to support students' academic language competency as well as learning of content through increasing students' participation in the classroom discourse and inviting them to use academic language. Academic language has lexical, grammatical, and functional features different from those of everyday language. In order for students to acquire competency in academic language, they need to participate in a wide range of classroom activities that require academic interactions between and among themselves and teachers (Hynds & Rubin, 1990). Classroom discussion provides necessary opportunities for students to use oral language to acquire academic vocabulary knowledge and expand their "linguistic repertoires" (Boyd & Rubin, 2006). Empirical studies demonstrate effects of discussions on academic vocabulary learning in various settings. In their study with fifth

grade students, Stahl and Clark (1987) found that students who were involved in semantic mapping and discussion activities learned words significantly better than the students in the same class who did not participate in the discussions. Additionally, Lloyd and Contreras (1985) found that students' vocabulary knowledge and reading comprehension of science texts increased when they participated in hands-on activities and class discussion. Carlisle, Fleming, and Gudbrandsen (2000) also found that incidental word learning occurred among fourth-grade and eighth-grade students in science classes where teachers used hands-on activities and discussions. Furthermore, classroom discussions have effects on students' academic language use beyond vocabulary. Echevarria (1995) compared a business as usual basal lesson approach that followed the manual and an Instructional Conversation (IC) approach that asked teacher-generated questions related to the basal text to generate maximum discussion with Spanish-speaking ELL students with learning disabilities. The results showed that compared to students who were in the regular classrooms, students who were taught using the IC approach used more academic language, which was measured by the their use of texts as evidence, complete sentences, and complex language form. Also, in their examination of 58 8th grade English classrooms, Nystrand and Gamoran (1991) found that engaging students in discussions not only increased students' use of academic language, but also that the increased use of academic language was associated with students' achievement. Discussion time had particularly strong effects where four additional minutes spent in discussion daily was associated with a one-point increase on the achievement test. Similar results were found in their study of 8th grade social studies classrooms where time spent in discussion was related to students' achievement (Gamoran and Nystrand, 1991).

Even though classroom discussions have a great potential to support students'

development of academic language as well as content knowledge, they rarely occur in classrooms. Observational studies of classrooms of both native English speakers and English Language Learner (ELL) students show that students are not given many opportunities to speak in class and classroom talk is often dominated by teachers (Applebee et al., 2003; Cazden, 1988; Long & Porter, 1985; Nystrand, 1997). Furthermore, when students do participate, exchanges are often between the teacher and students and students rarely engage in dialogue with each other (Elizabeth et al., 2012). Also, student engagement is mostly procedural, dealing with classroom rules and regulation rather than academic content under study (Nystrand & Gamoran, 1991). The language demands placed upon students are often very narrow where they are seldom asked to use language for advanced functions, but are frequently asked to recall information and procedures already presented by the teacher (Barnes, 1990; O'Connor & Michaels, 2007). The lack of high quality discussion in the classroom is often attributed to teachers' fear of losing control of the classroom and not knowing how to respond to students' responses (Lawrence et al., 2015; Nystrand et al., 1997). Therefore, in order for high quality discussion to take place in the classroom, teachers need considerable amount of support for facilitating discussion.

Features of High-Quality Classroom Discussion

One way to support teachers is to help create an environment that is conducive to high quality discussion. First, in classrooms with high quality discussion, there are ample opportunities for students to participate in the classroom discourse and the ratio of student to teacher talk is high (Elizabeth, Ross, Snow, & Selman, 2012; Lawrence et al., 2015; Murphy et al., 2009). Meaningful student participation in the classroom discussion can be initiated with the teacher asking authentic questions that do not have prescribed answers

(Duke, Pearson, Strachan, & Billman 2011; Nystrand & Gamoran, 1991). Asking authentic questions allows the classroom discourse to extend beyond the question and answer sequence and encourages student participation through providing opportunities for students to draw on their experiences (Nystarnd & Gamoran, 1991). There are various ways opportunities for student participation in the classroom discourse were created through authentic questioning in prior intervention studies. For instance, both Vaughn and colleagues (2009) and Lesaux and colleagues (2010) had similar approaches where they gave student pairs opportunities to discuss prompts such as "Can you *interpret* what the song means?" that were related to lesson topics and used target words that were explicitly taught. Snow and colleagues (2009), had students debate on controversial topics such as "Does rap music have a negative effect on youth?" They noted that controversial topics stimulated discussion as well as provided a motivating context for students to use target words (Snow, 2010). Second, in classrooms with high quality discussion, teachers engage students in extended interactions that go beyond the Initiate Response Evaluate (IRE) format where the teacher is merely testing students' knowledge (Lawrence et al., 2015; Michaels et al., 2008; Nystrand & Gamoran, 1991; Wolf, Crosson, & Resnick, 2005). In addition to asking authentic questions, teachers can further engage students in extended interactions by using talk moves that incorporate students' responses (Michales et al, 2008; Nystrand & Gamoran, 1991). Nystrand and Gamoran (1991) explain that when teachers ask questions that incorporate students' responses, their responses become a temporary topic of discussion. Furthermore, by asking students to explain their thinking and provide evidence, teachers can foster academically productive discussion (O'Conner & Michaels, 2005). Lastly, high quality classroom discussion is characterized by opportunities to exchange ideas freely among students instead of interactions always being between the

teacher and students (Lawrence et al., 2015; Michaels et al., 2008; Nystrand, 1997). In order for students to be able to exchange ideas freely, they need to be able articulate their own thoughts as well as understand what their peers are saying so that they can respond to them. Revoicing, a talk-move where the teacher restates what the student said in a coherent manner (e.g. I hear you are saying _____. Is that right?) makes student thinking visible as students sometimes struggle to articulate themselves clearly (Michaels et al., 2008). Furthermore, O'Connor and Michaels (1996) explain that students' utterances that were rearticulated by the teacher then become the basis on which other students could build argument in the classroom. In addition to revoicing, teachers can use talk-moves that encourage students to apply their own reasoning to someone else's reasoning by asking them agree or disagree with another (e.g. "Do you agree or disagree and why?"). Teachers can also connect one student's contribution to another student's contribution to encourage students to exchange ideas freely rather than only responding to the teacher (O'Connor & Michaels, 1996).

Academic Language Interventions

With growing attention to academic language as a key ingredient for academic success, there have been an increased number of intervention studies that have used various approaches to promote middle school students' development of academic language. One common approach has been to focus on the instruction of general academic words informed by the research on effective vocabulary instruction. Language Workshop (Townsend & Collins, 2009), Vocabulary Improvement Program (Carlo et al., 2004), Academic Language Instruction for All Students (ALIAS) (Lesaux, Kieffer, Faller, & Kelley, 2010), and Word Generation (Snow et al., 2009) are examples of academic

language interventions that provided general academic word instruction. Although vocabulary word instruction has been the main focus of these interventions, they have been situated it in a larger academic language context such as reading informational texts, having debates and discussions, and writing essays. Another common approach has been to focus on academic language in content areas. Examples of this approach are Quality English and Science Teaching (QuEST) in science (August, Branum-Martin, Cardenas-Hagan, & Francis, 2009), Vaughn and colleagues' (2009) study in social studies, and Collaborative Reasoning (Chinn, Anderson, & Waggoner, 2001) in language arts. These studies have integrated literacy instruction with content instruction and while many of them taught content-specific vocabulary words, they had a broader focus than teaching words. Rather, they have provided students with opportunities to become active participants in the disciplinary community by engaging them in activities such as discussions and inquiry-based experiments.

Since the present study used classroom discussions as a means to promote academic language use in classrooms, the following sections will review in detail four particular academic language interventions that have used classroom discussions as a part of the instructional methods. The first intervention, Language Workshop (Townsend & Collins, 2009) is an afterschool general academic word intervention with middle school ELL students. The second study by Vaughn and colleagues (2009) is a middle school social studies intervention with ELL students focusing on content-specific word instruction. The third intervention, Collaborative Reasoning (Chinn et al., 2001) is an intervention study conducted in 4th grade English Language Arts promoting increased student authority and participation in book discussions. The last intervention, Word Generation (Snow et al., 2009) is a middle school general academic word intervention that was implemented across

four content area classrooms.

Language Workshop

Language Workshop is an afterschool intervention designed and implemented by Townsend and Collins (2009) to increase middle school English language leaners' general academic word knowledge through the use of activities that engage students with academic texts, academic vocabulary, as well as academic discourse. For example, in the five-week-intervention (20 sessions total with 75 minutes per session) 12 words from the Academic Word List (Coxhead, 2000) were explicitly taught each week to 37 middle school students for a total of 60 words. Students engaged in a shared reading of science or social studies texts which used the target words, word-learning games, and discussion activities that provided them with opportunities to use the target words. For instance, after listening to a selection of music excerpts, students were asked to discuss questions such as, "Can you *interpret* what the song means? What did you like, *specifically*, about this song? Is this song *similar* to another song you like?" using the italicized target words for the week. Measure of Academic Vocabulary (MAV) that contained both target words and non-target words from AWL was administered to assess students' gains in depth of word knowledge. Students were asked if they had seen the words, to explain the meanings of the words, and to explain the contexts in which the words would be used. The results showed that students' knowledge of the target words on MAV grew significantly during the treatment period with a moderately large effect size (d= .83, p < .05*)*. However, there was no significant growth on the Peabody Picture Vocabulary Test III (Dunn & Dunn, 1997) or the Vocabulary Level Test, which measured general receptive vocabulary knowledge for general and academic words. Interestingly, there was a negative relationship between

students' growth during the control period and their posttest scores, showing that Language Workshop had a greater effect on students who were less successful at learning academic vocabulary in the absence of the intervention compared to their peers.

Social Studies Intervention

Vaughn and colleagues (2009) developed a social studies intervention to enhance social studies vocabulary knowledge and reading comprehension for middle school ELL students. In their randomized control study (n= 391), the intervention (n= 176) was used in students' regularly scheduled seventh-grade social studies class for 50 minutes a day, five days a week, for approximately nine to twelve weeks. Both treatment and control groups covered the same material over the same period using the same textbook; however the instructional approaches were different. The control group (n=205) received business as usual instruction while the intervention group participated in activities that engaged students with academic texts and academic vocabulary. For example, the units were organized around one or two central ideas. On a daily basis, students received explicit vocabulary instruction of 4 chosen words from the curriculum, which included providing Spanish cognates, visual representations, and sentences that used the words in the context of social studies as well as in contexts relevant to students' lives. In addition, a brief video clip that complemented the day's reading was shown to develop students' understanding of the main topic. The video clip was followed by a brief discussion on focus questions. Then, student pairs that were assigned according to their reading ability participated in paired reading, writing, and discussion of words. The results of the study showed that treatment students outperformed control students on both the researcher-developed vocabulary and comprehension measures with moderate to large effect sizes (respectively, 0.49 and 0.81).

A replication randomized control study (n=507) with 273 students in the treatment sections also showed significant results on the vocabulary and comprehension measures with small to moderate effect sizes (respectively, 0.36 and 0.47).

Collaborative Reasoning

Collaborative Reasoning (Chinn et al., 2001) consisted of activities that engaged students in reading stories and participating in discussions that reflect the discourse practices of English Language Arts. The goal of Collaborative Reasoning was to promote greater student talk and develop reasoned argumentation. Four 4th grade classrooms with a total of 84 students participated in the study. The teachers of the four classrooms were observed leading two story discussions in small groups using their business as usual method during reading lessons. Then, the teachers attended a half-day workshop on how to lead collaborative discussions (e.g. learning of instructional moves, role play, taking turns leading a collaborative discussion) and were observed leading collaborative small group discussions for seven weeks. Research team members met with the teachers several times during this period to discuss how the discussions had gone. Sixteen videos (two from before the intervention and two from the end of the intervention from four teachers) were transcribed and coded for types of turns (e.g. full turns, simultaneous turns, interjections) questions (e.g. purpose, open-ended, topic), and cognitive processes in student talk (e.g. connection across text, coordinating positions with evidence, articulation of alternative perspective). Results showed that there were many statistically significant differences between the "business as usual" discussions and Collaborative Reasoning discussions. First, the amount of student talk increased, while the amount of teacher talk decreased in collaborative reasoning discussions. Second, teachers asked a decreased number of

questions, and more of the questions were open-ended. Lastly, when participating in Collaborative Reasoning, students were more likely to use high-level cognitive processes. Whether these changes in discourse were related to student outcomes was not examined.

Word Generation

Word Generation (Snow et al., 2009) is different from the previously discussed interventions in that it was developed to be used across English language arts, math, science, and social studies classrooms in order to increase students' knowledge of general academic words. It is comprised of activities that engaged students with academic vocabulary, academic text, academic discourse, and academic writing. For example, in a 24-week-long program, five words from the AWL (Coxhead, 2000) were introduced each week and students spent 15 minutes daily engaged in activities that focused on a dilemma such as "Should students get paid to go to school?" Students discussed meanings of the words as well as cognates and morphological structures in ELA, engaged in a discussion and debate about the topic in social studies, and read texts and solved problems related to the topic using the target words in math and science. Lastly, students wrote a "Taking a Stand" essay on the dilemma in ELA. In their quasi-experimental evaluation of Word Generation with diverse learners (n=1016), Snow and colleagues (2009) examined 697 students across five schools and found that students who participated in Word Generation scored significantly higher ($\beta = 0.166$, $p < .001$) on the post-test of the target words compared to students in the comparison group even though the comparison group had a higher pretest score. In addition, intervention students' post-test scores were strongly related to the state standardized achievement test results ($\beta = 0.527$, $p < .001$) while this

relationship was absent for the control group. Furthermore, although the program was not designed specifically for ELLs, they found that Word Generation produced greater growth for language-minority students than English-only students. A longitudinal evaluation of Word Generation showed that it had a lasting impact on students' word learning (Lawrence et al., 2012). Also, in a recent longitudinal study examining effects of Word Generation on classroom discourse quality revealed that compared to control classrooms, classrooms that participated in Word Generation had significantly higher discourse quality and that the discourse quality mediated students' learning of target vocabulary words (Lawrence, Crosson, Paré-Blagoev, & Snow, 2015).

Key Features of Successful Academic Language Interventions

While the featured successful academic language intervention studies were different in the setting in which they took place (e.g. after school, across content areas), approaches they took (e.g. watching video clips, having debates on controversial topics), and the length (i.e. 5 to 24 weeks), they also had common key features. First, there was explicit instruction of target vocabulary words. For example, 20 words were taught explicitly per week in the social studies intervention implemented by Vaughn and colleagues (2009), 12 words per week in Language Workshop (Townsend & Collins, 2009), and 5 words per week in Word Generation (Snow, et., al, 2009) using research-based strategies such as providing student-friendly definitions, and pointing out Latin and Greek roots, and Spanish cognates. In addition, students were exposed to the words multiple times across the week. For example, in Language workshop and the Social studies intervention, students participated in shared-reading of books that included the target words, and in Word Generation, students were involved in tasks that included the target

words across content areas. Lastly, students were given opportunities to participate in discussion that provided opportunities for students to use the target words as well as become familiar with engaging in academic discourse in varying degrees. For example, Vaughn and colleagues' (2009) social studies intervention engaged students in discussion after watching a video clip on the topic under study. Also, Word Generation (Snow et al., 2009) engaged students in weekly debates over controversial topics. Furthermore, in Collaborative Reasoning (Chinn et al., 2001) and Word Generation (Snow et.al., 2009; Lawrence et. al., 2015), where more intense discussion took place compared to the other interventions, teachers were encouraged to use talk moves that promoted increased student participation such as asking authentic questions (questions that do not have prescribed answers), asking students to use evidence to support their ideas, and asking students to agree/disagree with other students' ideas.

Limitations of Prior Academic Language Interventions

Although the featured interventions took varied approaches in using discussion to provide support for academic language development in classrooms, all of them showed significant results. While they provide potential directions, there were some limitations. First, Vaughn and colleagues' (2009) social studies intervention and Language Workshop (Townsend & Collins, 2009) had a stronger focus on improving vocabulary instruction; discussion was used only as a means to provide opportunities for students to use the target words. Therefore, while these studies showed significant results on students' target word learning, they did not examine the changes in the students' participation in classroom discourse. Thus, the mechanisms by which discussion promoted the students' learning of vocabulary remain unknown. Second, Collaborative Reasoning (Chinn et. al., 2001) and

Word Generation (2015) classrooms participating in the interventions had significantly higher quality classroom discourse compared to that of control classrooms. However, they did not examine in detail the processes that led to the results in teachers' adapting new pedagogical practice. A second limitation relates to the ease of implementation and the fidelity with which the interventions were delivered. While the social studies (Vaughn et al., 2009) and Collaborative Reasoning (Chinn et al., 2001) interventions, which were carried out in one content area classroom, had high implementation of fidelity, Word Generation (Snow et al., 2009), carried out across four content area classrooms, had mixed results. In a randomized control study measuring the effects of Word Generation, the fidelity of implementation was measured by direct observation and the number of student workbook pages completed. The results showed that math and science teachers were far less likely to implement the program as faithfully as the language arts and social studies teachers (Lawrence et al., 2012). The reason why the math and science teachers in the Word Generation study might not have had high fidelity of implementation may be because the intervention was not connected to their main curriculum. As part of the intervention, math and science teachers each had to spend 15 minutes a week engaging students in Word Generation activities. This may place a great burden on teachers, because the activities did not directly relate to what they were teaching. The math and science teachers might not have found the activities to be valuable for classroom instruction of the content they feel is central to their discipline. Content area teachers often have difficulty seeing themselves as teachers of literacy/reading and responsible for supporting students' understanding of language specific to content areas. Therefore, having materials that directly relate to the content under study might motivate teachers to implement the intervention and see the importance of literacy learning in their content area.

Chapter III

PROJECT OVERVIEW

Research Context

Present study was conducted in a seventh grade global literacy class in, Riverside Middle School[1], an urban public school in the southern region of the United States. The school served students from low SES backgrounds where 95 percent of the students were eligible for free or reduced lunch programs. The school had been on the state's list for being one of the lowest-performing, bottom five percent of schools in terms of academic achievement. The Global literacy class, where the study took place, combined social studies and English language arts for 80 minutes of daily instruction.

Participants

The teacher participant in the study was Lisa[1] who was a seventh grade teacher of global literacy and reading. Lisa was a Caucasian female teacher whose native language is English. She had a bachelor's degree in secondary English education and six years of prior teaching experience in various settings including high school English and special education in the southern region of the United States. She had taught at Riverside middle school for a year and a half prior to the study and was enrolled in a master's degree program that specialized in teaching and learning in urban settings at the time of the study. One of the professors of the program emailed her students to see if anyone would be interested in participating in an intervention study

[1] The names of all people and places have been changed to protect identities

that promoted discussion in classrooms and Lisa volunteered because she understood the value of engaging students in discussion from her coursework, however had difficulties implementing it in her classroom.

Students involved in the study were Lisa's seventh grade global literacy students of ages 12 to 13. There were 18 students (9 girls and 9 boys) enrolled in the class. The majority of the students were African American and there were no English language learner students. While all the students participated in the intervention activities, since they were done as part of the regular class activity, only the consented students were taken out of the classroom for the intervention vocabulary assessments. Of the 18 students, 11 students (6 girls and 5 boys) were consented. Among the 11 consented students 10 students took both pre- and post-assessments for phase 1, and 8 students for phase 2. The students who had consented and had taken the assessments were representative of the whole class in terms of engagement and achievement. Lisa rated all of the students' level of engagement in the class on a scale of 3 (1 – low, 2 – medium, 3 – high). The average score for the whole class was 1.83 while the average of the consented students who took the assessments was 1.9. Also, the average GPA (F-1.0, D – 2.0, C – 3.0, B – 4.0, A – 5.0) of the spring semester for the whole class was 3.17 while the average score for the consented students who took the assessments was 2.91.

Pre-project Interview and Observations

I met with Lisa to discuss the goals of the project and understand her expectations before determining the specifics of the intervention activities. I explained that my guiding purpose was to help her provide explicit instruction of academic language (e.g. vocabulary, academic discussion) one day a week and a focused class time for students to participate in academic

discussion three times a week. I also explained that I wanted the intervention discussion activities to be on topics that were closely related to her scope and sequence and unit themes. Lisa said that she learned about the benefits of engaging students in discussion through her master's coursework and that she really wanted to engage her students in productive discussion. She showed me a poster she made and hung on her wall that listed accountable talk-moves. However, Lisa identified getting students to talk as an area of weakness and noted that she had a hard time picturing what it would look like in her classroom. She said she wanted to participate because she was excited about the opportunity to receive feedback on her instruction and improve her teaching skills.

After the initial interview, I observed and took notes on Lisa's instructional practices and met with her in order to design discussion activities that would best suit the needs of the teacher and students. I observed a full week of instruction from Monday through Friday in November 2014 and two additional days in January 2015 for the entire 80-minute block. I also met with Lisa 8 times between November 2014 and February 2015 before the start of the intervention to discuss my observation and plan the details of the intervention together. Furthermore, we kept in close touch by communicating via email.

Observations Prior to Implementation of the Study

Lisa's 80-minute global literacy block was structured into two parts. The first part of the class was teacher-directed whole group instruction during which content was taught. Then, after a restroom break, half of the students worked individually on an online program designed to help them learn and practice English Language Arts state standards (e.g. identify the main idea of a paragraph). The computer activities were counted as grades and were used to prepare students

for the state testing while Lisa worked with one small group on writing and a teacher resident worked with another small group on reading. The focus of the pre-intervention observation was to understand Lisa's current practices in terms of vocabulary instruction and student engagement in academic discourse. I also wanted to become familiar with the students as I planned to be a regular participant in the classroom. The following sections will describe my observation of the instruction prior to the intervention.

Student Motivation and Classroom Management

Observations prior to the intervention showed that there was a lack of motivation among students and that Lisa struggled with classroom behavior management. On many of the days, there were students who had their heads down not participating in the classroom activities and they would not lift their heads even after Lisa asked them to sit up straight. Furthermore, power struggles occurred on several occasions where Lisa would give a direction and a student would refuse to comply which caused interruption in instruction with Lisa having to discipline the student. If students continued to refuse to follow directions, they were sent out of the classroom for in-school suspension. Also, in the second part of the class where half of the class was supposed to work on their own using the classroom laptop, students were often off task. For example, some students were not on the correct website and were browsing other websites. Also, some students had computers that were not working and they took the entire time to turn the computer on and load the program. Although Lisa told the students to face a certain way so that she could see what they were doing on the laptops, because she was busy with the small group she was teaching, as long as the students were not disrupting the class, she ignored them.

Vocabulary Instruction

Some vocabulary instruction was already part of Lisa's instruction. For example, when she was reading out loud, she asked students to infer what a word might mean using context clues and provided a student-friendly definition. However, vocabulary instruction was not done systematically. For example, although the 7th grade team plans included important words for the unit, Lisa did not teach all of the listed words. She also did not have plans for which words she would teach when. Rather, vocabulary instruction was done spontaneously as difficult words appeared during the instruction. Therefore, she did not hold students accountable for learning the words. She seldom revisited the words she taught or checked whether students had learned the words.

Classroom Discourse

The first part of the class instruction was mostly teacher-directed, so Lisa dominated the classroom talk. There were rarely opportunities for students to speak. When there were academic interactions, they were between the teacher and one student in Initiation-Response-Evaluation format where Lisa would pose a question to which she already knew the answer. On one of the days I observed, Lisa read aloud two different books on sit-in movements in the 1960s. Although she explained difficult words when reading, she did not ask any questions. Also, Lisa failed to engage in extended discussion even when there were opportunities. For example, one of the characters in the comic book she read out loud was a white restaurant owner who refused to let a man who was helping African Americans eat at his restaurant. When Lisa read aloud the dialogue between the restaurant owner and the other man, one student commented that the book was making him feel uncomfortable. While this moment could have been a great opportunity to

engage in a meaningful discussion with the student about what was making him feel uncomfortable, or engage the whole group in a discussion relevant to their lives by asking why it might be important to learn about these historical events, or whether racial discrimination still existed, Lisa responded by saying she understood why he would feel uncomfortable and moved on. Furthermore, even though the students were sitting in small groups, Lisa never engaged them in activities where they had to work together. However, because students were sitting so close together, they would talk to one another, but I never observed occasions when it was related to the on-going activity.

Designing the Project with the Teacher

I met with Lisa to share my observations and to determine the specifics of the project. She admitted that she might have been afraid to give students opportunities to talk to each other or engage in a whole group discussion because she was concerned that she might lose control over her class. Lisa was very enthusiastic about receiving support to make positive changes in her classroom. However, since engaging in classroom discussion was new for both the teacher and students and given the challenges associated with classroom management, we decided to begin the project with a 2-week pilot phase that would guide us in creating an intervention that best suited the needs of the teacher and students. Following the two weeks of the pilot study, Lisa and I decided on the specifics of the intervention and implemented it in two phases: three weeks for intervention phase 1, and two weeks for intervention phase 2 where my support would be withdrawn. While the entire project including the pilot study and two phases of intervention were implemented in seven weeks, due to snow days, spring break, and state testing, the project was spread out over three months from the end of February to beginning of May, 2015.

Lisa and I developed the activities for the pilot phase collaboratively. Lisa identified the content to be taught and we decided on the instructional approaches together. The pilot activities were designed to provide a motivating structure for students to engage in academic interactions in small group and whole group settings. On each week of the pilot study, Lisa taught five words on the first day followed by three days of implementation of discussion activities lasting 20 - 30 minutes each. Target words were chosen from the week's read-aloud book, readings, and the teacher's scope and sequence. The target words were a combination of general academic words and content-specific academic words. Before giving students student-friendly definitions Lisa and I wrote together, Lisa gave each group of students one sentence from the week's reading that contained the target word. She asked students to talk amongst the group to guess the word meaning. Then, she asked students to present their word, sentence, and what they thought the word meant. At this time, Lisa also handed out a vocabulary quilt sheet where students would write the definition provided by the teacher and draw a picture that described the word. This sheet stayed in each student's folder. A typical vocabulary lesson lasted about forty minutes. In the three following days, we implemented a different type of activity to understand their feasibility in her classroom. The activities included target words sort, fill in the blank with target words, philosophical chair, and discussion using clickers. Each activity lasted about 30 minutes.

Following the pilot study were the two phases of the intervention. The first phase of the intervention had the same structure as the pilot study. Lisa taught 5 target words on the first day of the week followed by focused time provided for an interactive a structure for discussion in small group and large group three times a week with each lasting about 30 minutes. However, based on the results from the pilot study, we decided that instead of doing a different activity each day, Lisa would engage students in whole group discussion activities using clickers. In the

first phase of the intervention, I guided Lisa in planning the intervention activities, preparing materials, and implementing intervention activities in her classroom. I also met with Lisa to provide feedback and reflect on improving the instruction. In the second phase of the intervention, however, my support was withdrawn, Lisa was asked to plan and teach on her own without the requirement of keeping the intervention structure. Lisa and I decided on the topic of instruction and target words together, however my support was pulled back and Lisa was solely responsible for planning and teaching her class. I was in the classroom only to record the classroom activities. Table 1 presents the three phases of the project and its description.

Unit Theme and Activities

Discussion activities were designed to encourage students' participation in academic discourse and were closely related to the unit theme so that they could complement the teacher's scope and sequence. During the pilot study, the unit theme was globalization and discussion activities were planned around the big idea "globalization has changed the way we live." In the first phase of the intervention, because two weeks of instructional time were lost due to snow days, the 7th grade team decided not to follow the original scope and sequence and decided to instead use Scholastic SCOPE Language Arts Magazine to prepare students for the quickly approaching state testing. Therefore, in the first phase of the intervention, the discussion activities were related to the Scope magazine students were reading. In the second phase of the intervention, Lisa decided to talk about the current event, death of Freddie Grey in Baltimore in relation to nonviolence movement. The following chapter will discuss the pilot study.

Table 1. *Description of Project Phases*

	Pilot Study	Intervention Phase 1	Intervention Phase 2
Duration	2 weeks	3 weeks	2 weeks
Researcher support	yes	yes	no
Vocabulary instruction (5 words/week)	yes	yes	yes
Discussion activities (3/week)	yes	yes	There was no designated time for discussion activities
Number of days clickers were used	1	7	2

Chapter IV

PILOT STUDY

Pilot Study Design

Observations of Lisa's instruction revealed that engaging students in academic discourse was indeed an area in need of improvement. However, since participating in discussion was new for both the teacher and students and given the challenges associated with classroom management, we began the project with a 2-week pilot phase that would guide us in creating an intervention that best suited the needs of the teacher and students. Lisa and I developed the activities for the pilot phase collaboratively. Lisa identified the content to be taught and we decided on the instructional approaches together. The pilot activities were designed to provide a motivating structure for students to engage in academic interactions in small group and whole group settings. Small group activities were included in order to provide meaningful opportunities to interact with one another as my observations prior to the study showed that even though the students were sitting in small groups, they were never given opportunities to work together. In addition, we tried to implement multiple types of activities to understand their feasibility in her classroom. On each week of the pilot study, Lisa taught five words on the first day followed by three days of implementation of discussion activities lasting 30 minutes each.

Vocabulary Instruction

In the beginning of each week during the pilot phase, Lisa explicitly taught five target words that were pre-selected from the week's reading using student-friendly definitions we wrote together (10 words total). Table 2 presents the list of the words that were taught in the pilot study. First, Lisa provided each group of three to four students one sentence from the week's

reading that contained the target word. She asked students to discuss in groups what the words might mean. Then, she asked students to present their word, sentence, and definition. At this time, Lisa also handed out a vocabulary quilt where for each word students were asked to write the correct student-friendly definition provided by the teacher including the sentence using the word, and draw a picture that described the word.

Discussion Activities

Students participated in six different types of activities that were new to both the students and the teacher. The purpose of engaging students in different types of discussion activities was to understand the feasibility of using them in the classroom. Table 2 presents the activities carried out during the pilot phase. Each type of activity was done only once. Some of the discussion activities included the taught vocabulary words, while some did not. Several activities were done mostly in small group settings in which students were asked to complete a task in their small group and then report back to the whole group. These were think-pair-share, word sort, and sentence completion activities. For the think-pair-share activity, Lisa asked students to share in their small groups whether or not they agreed with statements such as "Things that I use and buy have an impact on the environment." For the concept map/word sort activity, each small group of students received note cards with the target words and other words and phrases from the class reading (e.g. *decrease in*, *arable*, *technology*, etc.) that they were asked to arrange into positive and negative effects of globalization. For the sentence completion activity, students were asked to work in their small groups to complete five sentences that contained the target words from the week (e.g. Technology has *reshaped* the way people _____).

Activities that were done mostly in whole group settings with the teacher facilitating discussion were clicker discussion, Philosophical Chair discussion, and Fish Bowl discussion. Clicker discussion was an activity where each student was asked to vote yes or no on statements that used the target words such as "Schools should have the right to *censor* what students put on their Facebook/Instagram" using their clickers. After everyone voted, Lisa showed a bar graph that displayed the distribution of students' votes. Lisa then asked students to discuss in their small groups how they voted and why, before facilitating a whole group discussion. Philosophical Chair and Fish Bowl activities were whole group discussion methods Lisa learned about in her master's coursework that she wanted to try in her classroom and were intended to last the entire class period unlike the other activities that were intended to take about 20 - 30 minutes. For the Philosophical Chair activity, Lisa read statements such as, "We need to expand the land area available for living and growing food by cutting down the rainforest" and asked students to move to five places in the classroom labeled as agree, disagree, strongly agree, strongly disagree, and unsure. After the students moved to different places in the classroom, Lisa facilitated a whole group discussion. For the Fish Bowl activity, Lisa organized the classroom into inner circle and outer circles. She read statements such as, "There should be stricter and harsher punishments for cybercrimes." Students who had something to say about the statements were asked to sit in the inner circle and share while the students in the outer circle listened quietly. If students sitting in the outer circle had something to say about what was said in the inner circle, they were to join the inner circle.

Table 2. *Pilot Phase Activities and Target Words*

Unit Theme	Target words	Date	Setting	Intervention activities
Week 1 Globalization	arable, ecology, integration, reshape, proximity	3/2/15	Whole group	Word instruction
		3/3/15	Small group	Think Pair Share
		3/9/15	Small group	Word sort
		3/10/15	Whole group	Philosophical Chair Activity
Week 2 Globalization	biodiversity, censor, interdependency, malnutrition, resources	3/11/15	Whole group	Word instruction
		3/13/15	Whole group	Clicker discussion
		3/16/15	Small group	Target word sentence completion
		3/17/15	Whole group	Fishbowl activity

Observation and Feedback

Throughout the pilot phase, I worked closely with Lisa to assist her in creating and implementing the discussion activities. I also made observations while assisting her in the classroom and provided feedback immediately after the class session or during the weekly debrief meetings.

Data Collection and Analysis

Video/audio data

All eight sessions of the pilot study were video recorded using two video cameras. Two sessions were on days when there was explicit instruction of target words and six sessions were on days when the students were engaged in the discussion activities. One video camera was set

up facing the front of the classroom capturing the whole group interaction with the teacher wearing a microphone. A second video camera was placed near one small group that was comprised of consented students with high engagement levels. Audio recordings of the class sessions were also made as a back up. In addition, the debrief meeting held after the completion of the pilot study was audio recorded.

Data Analysis

The analysis of the video data from the pilot study was completed after the entire project including the two intervention phases were completed. The video recordings were analyzed to examine the changes in the quality of the classroom discourse. Specifically, the videos were coded to determine if there were the types of interactions that prior research has associated with high quality academic discussion.

In order to examine the discourse quality, I selected and coded four videos from the pilot study that were recorded on days when the students were engaged in discussion activities. The videos selected were, based on my observations, representative of the best classroom whole group discussion that occurred during the pilot phase. On these days the teacher did not have classroom management issues that prevented her from facilitating a productive discussion, and the students showed interest in the topic of discussion. Table 3 presents the activities that were carried out in the videos selected for coding. From the selected video clips, I identified 15-minute segments to code in 15-second intervals. The coding began when the teacher first started engaging students in a whole group discussion by giving directions. The first 15 minutes of the discussion were coded in 15-second intervals for the topic of the interaction (on-topic or off-topic). Only the intervals that were on-topic were further coded for interaction type (e.g. teacher

talking alone, quick interaction between teacher and students, and extended interaction between teacher and students) and interaction content (e.g. procedural, vocabulary).

Table 3. *Description of Pilot Study Activities Chosen for Analysis*

Date	Activity	Description
3/3/15	think-pair-share	Globalization has changed the way I live. Use agree/disagree sentence starters. Teacher models the use of sentence starters. Small group discussion.
3/9/15	word sort	Positive and negative effects of globalization word sort
3/10/15	philosophical chair	Teacher reads a statement such as, "We need to expand land area available for living and growing food by cutting down the forest" and students are asked to move to 4 corners of the classroom (agree, disagree, strongly agree, and unsure)
3/13/15	clicker discussion	Students are asked to vote with their clickers whether they agree or disagree with two statements: 1) I like integration of technology into classroom activities. 2) School should have the right to censor what students put on their Facebook.

Reliability

In order to ensure reliable use of the coding instrument, I trained a graduate student in the coding system. Trial videos were double-coded until we reached inter-rater reliability criterion of 80% agreement. Once we were reliable, the second coder independently coded four out of the ten videos to demonstrate maintained reliability. To ensure that coder drift did not

occur, reliability checks were conducted after every three videos coded by the author. If reliability was not met initially, the coders reached agreement through discussion until consensus was made, then double-coded an additional video to re-establish reliability. Reliability was below criterion on one occasion. Reliability exceed the criterion overall, with an average percent agreement of 97 percent for topic (Cohen's kappa = .87), 87 percent for type (Cohen's kappa = .78), and 88 percent for content (Cohen's kappa = .79).

Results

Implementation of the Pilot Phase Activities

The following sections will describe the observations made during the pilot phase focusing on the aspects of vocabulary instruction, the quality of the classroom academic discourse, and classroom management.

Vocabulary Instruction

In the beginning of each week, Lisa explicitly taught five target words that were pre-selected from the week's reading using student-friendly definitions we wrote together (10 words total). First, Lisa provided each group of students one sentence from the week's reading that contained the target word. She asked students to talk with others in the group to guess what the word might mean. Then, she asked students to present their word, sentence, and definition. At this time, Lisa also handed out a vocabulary quilt where each student was asked to write the correct definition provided by the teacher and draw a picture that described the word. In addition to the explicit word instruction in the beginning of the week, Lisa successfully discussed some of the target words again with students when they appeared in the intervention activities. For

example, when explaining about using clickers to vote on the statement, "I like *integration* of technology in the classroom," Lisa asked students for the meaning of the word *integration*. When students did not answer, she reminded them that the word segregation, a word students are familiar with, has an opposite meaning from the word integration and since segregate means to separate, integrate means to bring together. Then, she explained that when we integrate technology into the classroom, it means we bring technology and classrooms together. Although Lisa discussed meanings of target words, she did not always make a conscious effort to use the words. In the above example, after Lisa defined the word *integration* to explain the task, she did not use the word again for the rest of the activity. Both Lisa and students used the phrase, "*use* of technology" instead of "*integration* of technology" when discussing their votes in small group and large group. By not making a conscious effort to use the target words, Lisa missed opportunities to provide a rich language model for students. In addition, when the discussion activities did not explicitly include the target words, neither the teacher nor the students used the target words.

Quality of the Classroom Discourse

Classroom observations as well as the analysis of the coding data showed that the quality of the classroom discourse was low during the pilot study phase as indicated by the low level of student participation and the procedural nature of the overall classroom discourse. Table 4 presents the types of interactions and the content of the interactions that occurred during the pilot phase in each activity. There was a high percentage of teacher-only talk throughout the pilot study phase. On average, 51 percent of the on-topic intervals during the pilot study were coded as teacher-only talk, which means that for about half of the coded intervals, the teacher was

talking by herself and did not engage the students in interactions. Activity 2, which was the whole group discussion that occurred after the small group word sort activity and Activity 4, which was the clicker whole group discussion had the hi had the highest percentage of teacher-only talk at 52 percent and 56 percent respectively, while Activity 3, which was the philosophical chair activity, had the lowest percentage of teacher-only talk at 41 percent. When examining the content of the intervals coded as teacher-only talk, most of them were about procedures. On average, only 36 percent of the intervals coded as teacher-only talk pertained to content under study (e.g. vocabulary, science and world concepts). This means that when the intervals were coded as teacher-only talk, the discourse was likely to be of low quality, as the teacher was likely to be talking about procedures related to the on-going activities. We implemented six different activities during the pilot phase, so the teacher had to explain new procedures every time she engaged the students in the discussion activity. Furthermore, the teacher struggled with managing her class trying a new teaching approach and had to constantly redirect students and assist them. Even though Activity 2 and Activity 4 both had high percentages of teacher-only talk, the teacher-only talk in Activity 2 had the highest percentage coded as being about the procedures at 81 percent while Activity 4 had the least at 48 percent.

When the teacher did engage the students in interactions, they tended to be more about the content under study than procedures as, on average, 74 percent of all of the intervals coded as teacher and student interactions in the pilot study were about the content under study. However, further examination of the teacher-student interactions about content showed that, on average, 65 percent were quick interactions. These quick interactions were IRE type interactions that were low in quality. Often, they began with the teacher asking a question with a one-word answer and ended without her making an effort to engage other students or extend the interaction by asking

follow up questions. Extended interactions lasting four or more turns were rare where there were only six intervals out of 60 intervals coded as extended interactions in Activity 1, and five intervals in Activities 2 and 3. The most number of extended interactions occurred during activity 4, which was the whole group discussion after the clicker voting activity, where 11 intervals out of 60 intervals were coded as extended interactions.

Classroom Management

Observations during the pilot study showed that the teacher continued to struggle with classroom management as she was trying to employ a new teaching method that allowed students to have increased opportunities to talk in the classroom. Lisa had difficulties keeping students on task and had to constantly redirect them. While the videos that were coded for analysis were chosen because the teacher did not have significant discipline issues on those days, the results still reflect the behavior challenges the teacher experienced in the pilot study. For example, on average, 15 percent of the intervals (9 intervals out of 60 intervals) were coded as being off-task. Intervals were coded as off-task when the content of the classroom discourse was not related to the on-going activity at all such as when the teacher was disciplining students. Considering there were 7 intervals on average that were coded as extended interactions about the content, there were more intervals coded as being off task than students having high quality interactions with the teacher. Furthermore, as discussed earlier, 50 percent of the on-topic discourse was coded as teacher talking by herself. Also, the majority of such teacher-only talk was coded as having to do with the procedures of the activity rather than the science and world concepts under study. This result further illustrates the challenge the teacher had in keeping students on-task as she had to constantly redirect students and tell them what they needed to be doing. Activity 2 (word sort)

had one of the highest percentages of off-topic talk as well as the teacher-only talk about procedures. Activity 4 (clicker discussion) had one of the lowest percentages of off-topic talk as well as one of the highest percentages of the teacher-only talk about content.

Table 4. *Type and Content of Interactions by Activity*

	Activity 1	Activity 2	Activity 3	Activity 4	
Activity Type	Think-Pair-Share	Word Sort	Philosophical Chair	Clicker Discussion	Mean
Off topic (%)	7 (12)	10 (17)	11 (18)	8 (13)	9 (15)
On topic (%)	53 (88)	50 (83)	49 (82)	52 (87)	51 (85)
Teacher-only	24 (45)	26 (52)	20 (41)	29 (56)	25 (49)
Procedure	16 (67)	21 (81)	11 (55)	15 (52)	16 (64)
Content	8 (33)	5 (19)	9 (45)	14 (48)	9 (36)
Interactions about content (%)	18 (34)	17 (34)	23 (47)	20 (38)	20 (38)
Quick	12 (67)	12 (71)	18 (78)	9 (45)	13 (65)
Extended	6 (33)	5 (29)	5 (22)	11 (55)	7 (35)
Interactions about procedures (%)	11 (21)	7 (14)	6 (12)	3 (6)	7 (13)
Quick	10 (91)	7 (100)	5 (83)	3 (100)	6.5 (94)
Extended	1(9)	0	1 (17)	0	.5(6)

Discussion

The purpose of the two-week pilot study was to examine one seventh-grade teacher's initial implementation of activities that promote classroom discussion which would guide the design of the intervention. The teacher engaged students in six different discussion activities in collaboration with the researcher three times a week for thirty minutes each. Observation of the classroom instruction and coding of the video data revealed that even though opportunities for students to engage in discussion were introduced through various activities, high quality interactions between teacher and students rarely occurred. In addition, target vocabulary words were only used during the discussion when they were explicitly included in the prompt of the discussion question. On average, there were only seven out of 60 intervals that were coded as extended interactions related to the content under study. In addition, on average, 49 percent of the intervals were coded as teacher-only talk, 65 percent of which was coded as having to do with procedures. Furthermore, the teacher continued to struggle with classroom management as revealed in the 15 percent of the intervals that were coded as off topic talk on average. The teacher's struggle with implementing discussion in the classroom is consistent with prior research that indicate teachers need considerable amount of training and support in order to change the culture of classroom discourse and that simply providing opportunities to engage with one another may not be enough (Chiaravollati, 2010; Lawrence, et al., 2010). Having to engage students in six different new activities may have contributed to the challenges in managing the classroom and the low quality in classroom interactions. The teacher was already struggling with classroom management before the project and she had difficulty adopting new activities and managing her students at the same time as there was a lack of routine. Observations and the coding of the video data indicated that when the class was engaged in the whole group discussion

activity with clickers, however, the quality of the classroom discourse was better than the other days. Among the four videos coded, the clicker discussion had the least number of intervals coded as off-task, the lowest percentage of the teacher-only talk coded as procedural, and the most intervals coded as extended interactions about content. One way the clickers may have encouraged participation may be that they allowed students to participate at low risk since their votes were anonymous. In addition, students were asked to discuss topics that were familiar to them such as their preference for using technology in the classroom and their opinion on whether or not their schools should have the right to censor their Facebook accounts. Because the prompts were closely related to students' lives compared to other days when they were asked to discuss globalization, students may have felt comfortable sharing their opinions. Therefore, in preparation for the next phase of the intervention, we made a series of changes to the instructional design to provide improved support for the teacher. We decided to include the target vocabulary words in all of the discussion prompts to increase the likelihood of students' exposure to the target words. Also, in order to create a consistent routine for both the teacher and students to participate in discussion, we decided to only use clicker discussion format in the intervention instead of engaging students in a different activity every day. Lastly, the teacher was encouraged to use talk-moves that are associated with high quality classroom discussion.

Chapter V

INTERVENTION STUDY

Intervention Study Design

Given the challenges we experienced facilitating different kinds of discussion activities in the pilot study, several adaptations were made to the instructional design in the intervention. The intervention study was implemented in two phases. In the first phase of the intervention, which lasted 3 weeks, I continued to assist in creating and implementing the intervention activities, and provided feedback on the teacher's instruction. Also, Lisa continued to teach five words on the first day followed by three days of implementation of discussion activities lasting 20 - 30 minutes each. In contrast to the pilot study, however, the format of the discussion activities stayed the same throughout the first phase where students engaged in a discussion activity using clickers. Furthermore, the teacher was encouraged to use talk-moves that are associated with high quality classroom discourse (e.g. asking follow-up questions, asking students to respond to one another) and was given feedback regarding her use of the talk-moves. In the second phase of the intervention, my support was withdrawn to examine the teacher's uptake of the strategies. Furthermore, while the teacher was asked to teach the target vocabulary words we pre-selected together, she planned and taught lessons on her own and was not asked to keep the discussion activity format. The following sections will describe in detail the design of the intervention study.

Vocabulary Instruction

In the beginning of each week during both the first and second phases of the intervention, Lisa explicitly taught five target words that were pre-selected from the week's reading using

student-friendly definitions we wrote together. Appendix A presents the list of the words that were taught in the intervention study. First, Lisa provided each group of three to four students one sentence from the week's reading that contained the target word. She asked them to discuss in groups what the words might mean. Then, she asked students to present their word, sentence, and definition. At this time, Lisa also handed out a vocabulary quilt where for each word they wrote the correct student-friendly definition provided by the teacher including the sentence using the word, and drew a picture that described the word.

Discussion Activities

In the first phase of the intervention, students participated in three discussion activities a week followed by explicit vocabulary instruction of five words on the first day of the week. We used the same discussion activity format throughout the first phase of the intervention, using clickers to engage students in discussion, as this was the activity that was the most effective in the pilot phase (See Appendix C). Furthermore, the target words were included in the discussion prompts in the first phase of the intervention so that the students could have additional exposures to the words. Students were first asked to agree or disagree with statements related to the week's reading using their clickers. Once all students voted, the teacher displayed a bar graph showing the results of the student votes on the screen. Then, students were asked to briefly share with their small group before the whole group was brought together to discuss how they voted and why. In the second phase of the intervention, while the teacher continued to teach preselected vocabulary words, she was not required to continue with the discussion activity format. Instead, she was responsible for planning and teaching her own lessons. This was done to examine whether the teacher would be able to continue to provide opportunities for discussion in her

classroom without the support of the researcher.

Observation and Feedback

After the pilot study, I encouraged the teacher to use talk-moves that are associated with high quality discussion (e.g. asking follow-up questions, asking students to respond to one another). In addition, throughout the first phase of the intervention, I worked closely with Lisa, assisting her in creating and implementing the discussion activities. I made observations while assisting her in the classroom and provided feedback immediately after the class session or during the weekly debrief meetings. Feedback included discussing specific interactions the teacher had with students and talk-moves she could have used. In the second phase of the intervention, I was not involved in the lesson planning and did not provide feedback on her instruction.

Data Collection and Analysis

The data collected for analyses included video and audio recordings of classroom activities, pre and post instruction vocabulary knowledge assessment measure, and audio recordings of debriefing meetings with the teacher

Video/audio Data

A total of 16 classroom sessions were video and audio recorded during the 18 days of intervention activities across two phases. Of the 16 recorded classroom sessions, two were on days when vocabulary instruction occurred while 12 were on days when discussion activities took place. Table 5 presents the number of video data collected by phase. One video camera was

set up facing the front of the classroom capturing the whole group interaction with the teacher wearing a microphone. A second video camera was placed near one small group that was comprised of consented students with high engagement levels. In addition to classroom sessions, debrief meetings with Lisa were audio recorded. After each week of the intervention, I met with Lisa to discuss the progress of the intervention. There were a total of three debrief meetings. In addition, I took notes on informal meetings I had with Lisa to provide feedback on her instruction and plan for the following week.

Table 5. *Video Data Collection by Phase*

	Phase 1	Phase 2	Total
Word instruction	3	1	4
Discussion activities	9	3	12
Total Video days	12	4	16

Vocabulary Assessment

In order to determine whether students made significant gains on the words that were taught during the intervention, I administered pre- and post-instruction vocabulary assessments that included taught words and control words. Target words were the words that were preselected from the readings and explicitly taught during the intervention typically on the first day of the week. Control words, chosen from Marzano's (2004) content area academic word list for 6th and 7th grade social studies, were the words that did not appear in the curriculum and were highly likely unknown to students. Different control words were chosen for each phase. Please see

Appendix A for the list of target words and control words for each phase. Pretests were administered before the start of the each phase and posttests were administered immediately after the end of each phase. Phase 1 included 15 target words and 3 control words and Phase 2, included 10 target words, and 5 control words. In order to protect against word order effects, the pre and posttests had words in different orders. The order in which students were pulled out to take the pre and posttests was counterbalanced as well.

To measure the students' productive knowledge of taught words, they were asked to give information about the words at pretest and posttest. For example, for each word, students were asked, "What is (a) _____?" and "Can you tell me anything else about _____?" The assessment was administered individually in a quiet space outside of the classroom and all students' responses were audiotaped. A coding scheme was developed to categorize and score students' responses. Students' responses were coded on a 2-point-scale (2 - developed knowledge, 1 – partial knowledge, 0 – no knowledge). Students' responses were scored as 2 points if they were able to provide a definition, as 1 point if they were able to provide some related information or context for the word and 0 point if they did not have anything to say about the word or provided unrelated or incorrect information. For example, for the target word *device,* one student's response, "a phone is a *device*" was scored as 1 point because she did not expand when asked to say more. Another student's response, "something that helps you do something like technology - phone," was scored as 2 points.

To ensure reliability, a randomly selected 25% of the assessment recordings were double-coded. I trained the second coder, and audio recordings were double-coded until an acceptable level of reliability was achieved (85%). When reliability was reached, the second coder coded twenty-five percent of the videos. To ensure that coder drift did not occur, reliability checks were

conducted after every four videos coded by the author. Overall, the vocabulary assessment recordings were coded at 90% inter-rater reliability using percent agreement.

Analysis

In order to determine whether students learned the taught words in each of the three phases, one-way repeated-measures ANOVA with the within subjects variable of time (pretest and posttest) was used for each phase. In order to determine whether students learned more taught words (target words that were explicitly taught) than control words (words that were not likely known by students and were not included in the curriculum), 2 X 2 repeated-measures ANOVA with the within-subjects variables of time (pretest and posttest) and level of instruction (taught control words) was performed to examine students' growth in productive vocabulary knowledge for each of the three phases.

Classroom Discourse Quality Measure

Classroom videos were used to examine the changes in the classroom interaction patterns throughout the intervention. Specifically, the videos were coded to determine if there were the types of interactions that prior research has associated with high quality academic discussion. In order to examine the discourse quality, I selected and coded four videos from the first phase and two videos from the second phase that were recorded on days when students engaged in discussion. The videos were chosen because based on observation, they were representative of the best classroom whole group discussion that occurred in each phase. These videos were recorded on days when the teacher did not have classroom management issues that prevented her from facilitating a productive discussion, and when the students showed interest in the topic of discussion. Table 6 describes the activities carried out in the videos selected for coding.

Table 6. *Description of Discussion Activities Selected and Coded for Analysis*

Phase	Date	Activity	Description
1	4/8/15	Clicker discussion	1. Which activity is more *overtax*ing on your brain? 2. What do you think about distracted driving laws?
	4/15/15	Clicker discussion	1. Do you think if all toys were *manufactured* in the U.S., we would have fewer problems? 2. Buckyballs were eventually banned; was CPSC right to ban them?
	4/21/15	Clicker discussion	1. Are there are Riverside middle school *regulations* that are too *stringent*? 2. Do you think there are times when it is okay to break the law/*regulation*?
	4/23/15	Clicker discussion	1. Would these *prominent* warning labels suggested by FDA help people quit smoking? 2. Come up with a *counter* argument for why phones should not be allowed in the classroom.
2	5/7/15	Anticipation Guide	Anticipation guide discussion
	5/14/15	Clicker discussion	Discussion on violence and war Is a war ever justified?

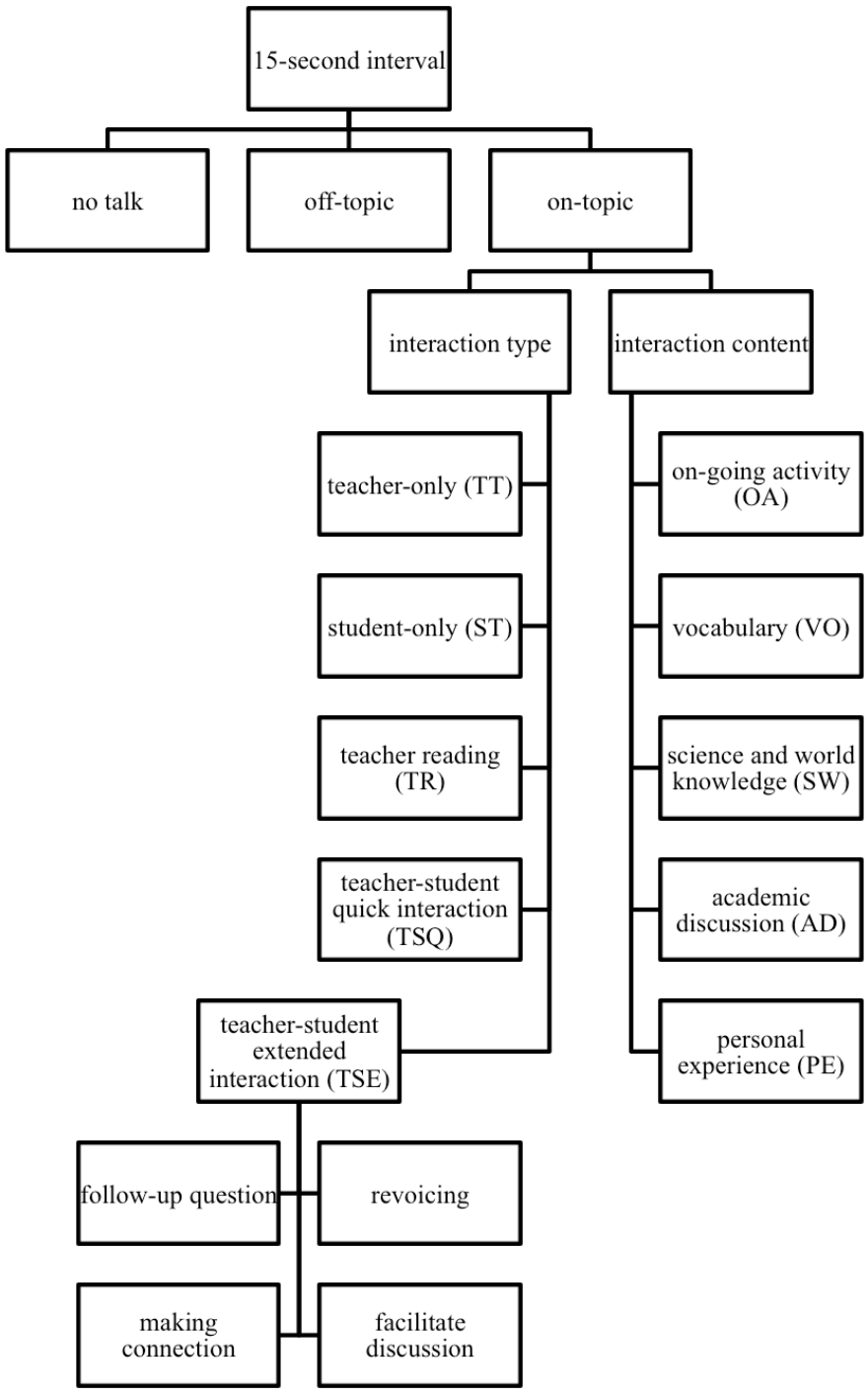
From the selected video clips, I identified 15-min segments to code in 15-second intervals. Coding began when the teacher first started engaging students in a whole group discussion by giving directions. Figure 1 provides a visual representation of the coding scheme. The first 15 minutes of the discussion were coded in 15-second intervals for the topic of the interaction (on-topic or off-topic). Only the intervals that were on-topic were further coded for interaction type (e.g. teacher talking alone, extended interaction between teacher and student) and interaction content (e.g. procedural, vocabulary). Then, intervals that were coded as teacher-student extended interactions about content were further coded for the type of teacher talk-move used within the interval. The teacher talk-move types included follow-up questions, revoicing,

making connections, and facilitating discourse. Within the extended interaction interval, when the teacher asked additional questions based on the initial response given by the student, they were coded as *follow-up questions*. *Revoicing* was when the teacher rephrased what the student said in a coherent manner that everyone could understand and asked student to verify (e.g. I hear you are saying…). When the teacher made a connection between what one student said to another students' response, it was coded as *making connections*. *Discussion facilitation* was when the teacher was facilitating discussion among students such as by asking students to agree or disagree with one another or take turns.

Reliability

In order to ensure reliable use of the coding instrument, I trained a second coder in the coding system. Trial videos were double-coded until we reached inter-rater reliability criterion of 80% agreement. Once we were reliable, the second coder independently coded two out of the six videos to demonstrate maintained reliability. To ensure that coder drift did not occur, reliability checks were conducted after every three videos coded by the author. If reliability was not met initially, the coders reached agreement through discussion until consensus was made, then double-coded an additional video to re-establish reliability. Reliability was below criterion on one occasion. Reliability exceed the criterion overall, with an average percent agreement of 97 percent for topic (Cohen's kappa = .87), 87 percent for type (Cohen's kappa = .78), and 88 percent for content (Cohen's kappa = .79). Please see Appendix B for the complete coding manual. A total of 90 minutes of videos, which equals to 360 15-second intervals were coded.

Figure 1. *Classroom Discourse Quality Coding Scheme*



Results

Research Question 1: *What was the quality of the classroom discourse? Were there changes in the classroom discourse quality across the two intervention phases as measured by the types and contents of classroom interactions? Did the teacher use the talk-moves that promote high quality discussion? Were there relationships among interaction types and interaction content?*

There were a number of similarities in the structure of teacher-student discourse in phases 1 and phase 2 (See Table 7). Analysis of the coding revealed that the number of intervals coded as off-topic was similar across the two phases. In phase 1, 9.84 percent of the intervals on average were coded as off-topic talk while 9.01 percent on average were coded as off-task talk in phase 2. Compared to the results from the pilot study where 15 percent of the intervals on average were coded as off-task, there was a slight improvement in the first phase of the intervention that continued in the second phase of the intervention when the researcher support was withdrawn. In addition, there was no statistical difference in the amount of time when the teacher was the only person talking in the classroom between phase 1 and phase 2, $t(4) = 1.96$, $p > .05$. On average, 36.5 percent and 40.16 percent of the classroom discourse was coded as teacher-only talk in phase 1 and phase 2, respectively. This is a slight decrease from the pilot study where 49 percent of the classroom discourse was coded as teacher-only talk. Examining the intervals that were coded as extended teacher-student interaction (TSE) where the teacher engaged in an interaction with a single student for four or more turns or with two or more students, there was a decrease in the percentage from phase 1 to phase 2. In phase 1, 23.36 percent of the intervals on average were coded as extended interaction, but in phase 2, the percentage decreased to 18.55 on average. However, the difference was not statistically significant, $t(4) = 0.6$, $p > .05$. This indicated that the teacher was able to have more extended

interactions with students in both phases of the intervention compared to the pilot study where only 12 percent of the intervals were coded as extended interactions. The results also showed that the teacher engaged in more low-quality quick-interactions with students in phase 2 (M = 20, SD = 1.41) compared to phase 1 (M = 17.5, SD = 6.45); however, this difference was also not statistically significant, $t(4) = 0.51$, $p > .05$).

Table 7. *Type of Interactions by Phase*

	Phase 1 (4 videos)			Phase 2 (2 videos)		
	Mean Counts	SD	%	Mean Counts	SD	%
Off topic (OT)	6	1.41	9.84	5.5	2.12	9.01
Teacher-only talk (TT)	22.25	4.03	36.5	24.5	2.12	40.16
Teacher-student quick interaction (TSQ)	17.5	6.45	28.69	20	1.41	32.79
Teacher student extended interaction (TSE)	14.75	8.26	24.18	11	1.41	18.03

Intervals that were coded as extended interactions were further coded to examine the teacher's use of talk-moves (See Table 8). In an effort to increase the quality of classroom discourse after the pilot study, the teacher was encouraged to use the types of talk-moves that prior studies reported as being related to achieving high quality classroom discourse. The results showed that the teacher indeed used these talk-moves in phase 1 and continued to use them in phase 2. Furthermore, there was no statistically significant difference in the number and types of talk-moves the teacher used across the two phases. The talk-move that was most frequently used

by the teacher in both phases was asking follow-up questions. This is when the teacher asked questions that incorporated students' responses to earlier questions. On average, the teacher asked follow-up questions 6.2 times in the first phase and 4.5 times in the second phase. The second most used talk-move in both phases was revoicing. It occurred an average of 2 times in phase 1 and 3.5 times in phase 2. Talk- moves, facilitating discussion and making connections did not occur as often in both phases. On average, the teacher used the discussion facilitation talk-move 1.75 times in phase 1 and once in phase 2. The teacher used the making connections talk-move an average of once in phase 1 and 0.5 time in phase 2.

Table 8. *Type of Teacher Talk-Moves by Phase*

	Phase 1 (4 videos)		Phase 2 (2 videos)	
	Mean	SD	Mean	SD
Asking follow-up questions	6.25	3.96	4.5	1.5
Revoicing	2	1.41	3.5	2.5
Making connection	1.75	1.09	1	0
Facilitating discussion	1	1.22	0.5	0.5

Analysis of the content of the classroom talk revealed that the majority of the classroom talk revolved around the content under study rather than procedures (See Table 9). In general, there was a decrease in the amount of procedural talk compared to the pilot study phase where about half of the classroom talk was about procedures. In phase 1 and phase 2, only 11.89 percent and 17.39 percent of the intervals were coded as procedural talk respectively. Further

examination of the content related intervals showed that there were some differences in the types of content related talk that occurred in the two phases. In phase 1 science and world knowledge and personal experience made up most of the content at 40.16 percent and 18.44 percent, respectively. However, in phase 2, while the majority of the intervals were about science and world knowledge at 68 percent, talk related to personal experience only occurred 5.26 percent. Furthermore, the difference in the amount of science and world knowledge related talk in phase 1 and phase 2 was statistically significant, $t(4) = 2.81$, $p < 0.05$. On the other hand, while there also was a difference in the amount of talk about vocabulary between phase 1 ($M = 7.75$, $SD = 5.62$) and phase 2 ($M = 1.5$, $SD = 2.12$), this was not statistically significant, $t(4) = 1.45$, $p > 0.05$.

Table 9. *Content of Interactions by Phase*

	Phase 1 (4 videos)			Phase 2 (2 videos)		
	Mean Counts	SD	%	Mean Counts	SD	%
World knowledge (SW)	29.75*	3.59	48.77	40*	5.66	65.57
Vocabulary (VO)	7.75	5.62	12.7	1.5	2.12	2.5
Metalinguistic skills (AD)	2.5	2.38	4.1	0.5	0.71	0.82
Personal experience (PE)	7	4.69	11.48	3	4.92	5.26
Procedural Talk (PT)	7.25	2.87	11.89	10.5	10.61	17.39

*$p < .05$.

In order to examine whether there were statistically significant associations among interaction type and interaction content, a cross-tabulation procedure with chi-square test was employed for each phase. The interaction types included were teacher-only talk (TT), teacher-

student quick interaction (TSQ), and teacher-student extended interaction (TSE). Because some of the content types were not observed frequently enough to test statistically, the codes that indicate content-related talk – science and world knowledge (SW), vocabulary (VO), metalinguistic skills (AD), and personal experience (PE) – were collapsed. Therefore, the content types included procedural talk (PT) and conceptual talk (CT). Tables 10 and 11 present the results from the cross-tabulation analysis for phase 1 and phase 2, respectively. Each cell in the tables provides the count and percentage. In addition, the adjusted standardized residuals are presented in parentheses.

Results show that there were statistically significant overall associations between interaction type and interaction content variables in phase 1, χ^2 (2, N = 205) = 29.03, $p < .001$, and phase 2 χ^2 (2, N = 109) = 8.88, $p < .01$. In order to determine which variables had significant relationships that contributed to the chi square test's result of overall significance, standardized adjusted residuals were calculated for each of the cells. Cells in which the absolute value of the adjusted standardized residuals were greater than 2.0 (α=.05) were considered significant. An adjusted standardized residual greater than 2.0 indicates that the observed cell frequency is significantly larger, or if the sign is negative smaller, than expected by chance. In both phases, extended teacher-student interaction type had a strong significant association with the content-related interactions with the adjusted standard residuals ranging from 2.6 to 4.3. Furthermore, in both phases teacher-only-talk interaction type variable had a strong significant association with procedural content variable with the adjusted standard residuals ranging from 2.4 to 5.1.

Table 10. *Cross Tabulation between Content and Type of Interactions in Phase 1*

		Content			
		Procedural talk (PT)		Content-related talk (CT)	
		N	(%)	N	(%)
Type	Extended interaction (TSE)	0	0 (-4.3)*	70	100 (4.3)*
	Quick interaction (TSQ)	6	10.5 (-1.0)	51	89.5 (1.0)
	Teacher-only talk (TT)	24	30.8 (5.1)*	54	69.2 (-5.1)*

Table 11. *Cross Tabulation between Content and Type of Interactions in Phase 2*

		Content			
		Procedural talk (PT)		Content-related talk (CT)	
		N	(%)	N	(%)
Type	Extended interaction (TSE)	0	0 (-2.6)*	23	100 (2.6)*
	Quick interaction (TSQ)	7	17.9 (-.3)	32	82.1 (.3)
	Teacher-only talk (TT)	14	29.8 (2.4)*	33	70.2 (-2.4)*

Research Question 2: *Did the students learn the target vocabulary words in each phase? Did the students make significant gains in target word knowledge compared to control word knowledge in each phase? Did students learn some target words better than others?*

Students were assessed on their expressive knowledge of target words, words that were chosen from the readings and taught explicitly in the beginning of the week, and control words, words that did not appear in the curriculum and were not likely to be known by students. In phase 1, students had a similar average score per word on the target words and control words before the intervention (See Table 12). However, a comparison between students' learning of taught words and control words revealed that students learned significantly more target words than control words in phase 1 ($p < .01$). Repeated-measures ANOVAs indicated that students made significant gains in their target word knowledge in phase 1 (F=15.47, $p < .01$, d= 1.47). Figure 2 provides a visual representation of students' gains in target word knowledge compared to gains in control word knowledge in phase 1. In phase 2, students had a higher average score per word on the target words compared to the control words before the intervention. However, repeated-measures ANOVA revealed that students did not make significant gains on the target words in phase 2. Figure 3 provides a visual representation of students' gains in target word knowledge compared to gains in control word knowledge in phase 2.

Table 12. *Pre- and Post-Vocabulary Assessment by Phase*

	Phase 1 (n = 10)		Phase 2 (n = 8)	
Target words	15 words		10 words	
	Pretest	Posttest	Pretest	Posttest
Mean	0.31	0.68**	0.50	0.53
Range	.00 – 1.33	.00 – 1.87	.10 –1.30	.20 – 2.00
SD	.50	.64	.57	.66
Variance	.25	.41	33	.44
Control words	3 words		5 words	
	Pretest	Posttest	Pretest	Posttest
Mean	0.07	0.07	0.28	0.23
Range	.00 – .67	.00 – .67	.00 – 1.00	.00 – 1.00
SD	.21	.21	.32	.35
Variance	.04	.04	.10	.12

*$p < .05$. **$p < .01$

Figure 2. *Students' Learning of Target Words Compared to Control Words in Phase1*

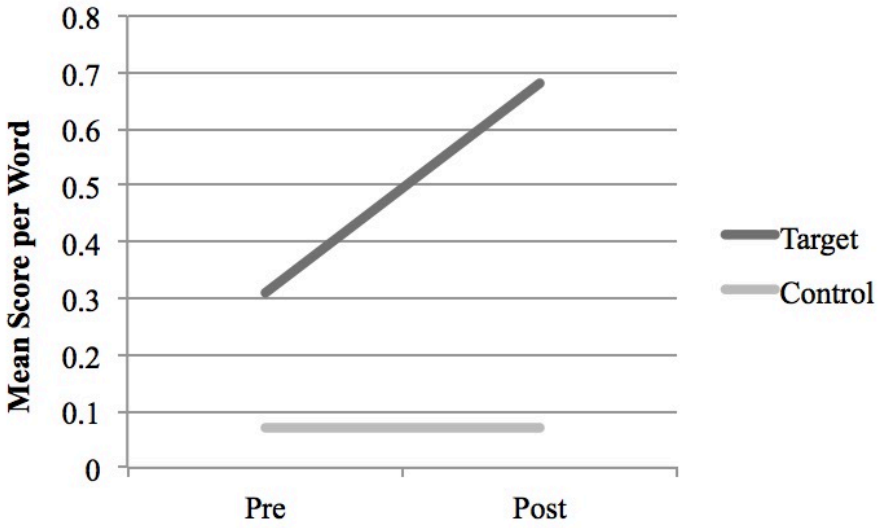
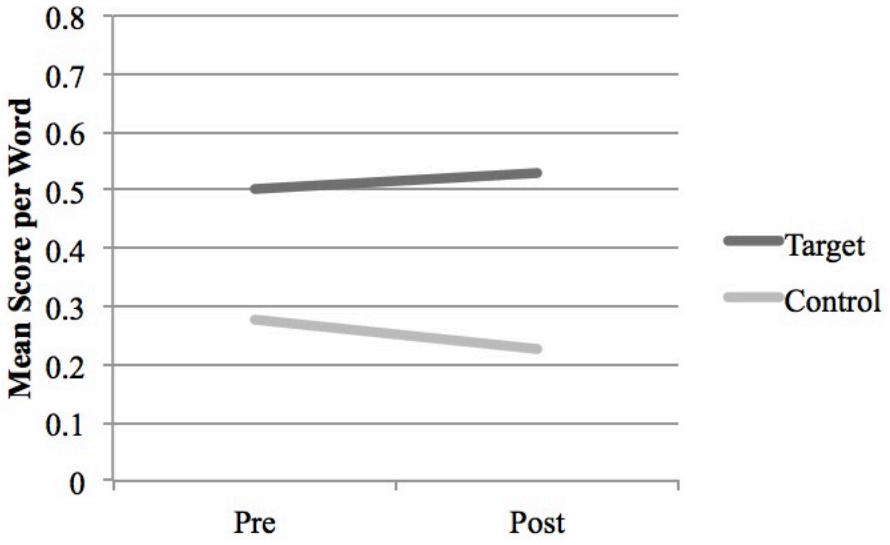


Figure 3. *Students' Learning of Target Words Compared to Control Words in Phase 2*



Results also indicated that in phase 1 when the students made significant growth on the target words, they learned some words better than others. Table 13 presents the average score each student gained on each target word in phase 1. The words that had high average scores gained per student were *stringent* and *overtax.* For the word *stringent*, six students went from having no knowledge to some knowledge (1 point), and two students went from having no knowledge to developed knowledge (2 points). For the word, *overtax*, three students went from having no knowledge to some knowledge (1 point). Three students went from having no knowledge to developed knowledge (2 points). Three students had 0 point and one students had 2 points on the pretest and their scores remained the same for the posttest.

Table 13. *Score Gained per Student on Target Words by Phase*

	Target word	Mean Gain	SD
Phase 1	stringent	1	.67
	overtax	.9	.88
	recall	0.6	.70
	standard	0.5	.70
	flaw	0.5	.71
	neuroscientist	0.4	.84
	staggering	0.4	.70
	prominent	0.4	.84
	aimless	0.3	.67
	consumer	0.1	.31
	counter	0.1	.32
	reboot	0.1	.57
	regulations	0.1	.31
	manufacture	0.0	0
Phase 2			
	Debris	0.0	0
	custody	0.1	.93
	sever	0	0
	charred	0.5	.88
	mourners	0.5	.67
	demonstrator	0.5	.88
	dismay	0	0
	legitimate	-0.1	.3
	fueled	0.2	.44
	looting	0	1

Discussion

The purpose of the study was to examine the changes in a 7th grade teacher's classroom discourse practices and her students' word learning in relation their participation in the five week academic discussion intervention implemented over two phases following a two-week pilot study. In order to facilitate high quality discourse, about 25 minutes of classroom time was

designated specifically for the teacher to engage students in discussion. Furthermore, the teacher was encouraged to use talk moves that would facilitate interactions, such as asking questions related to students' responses, making connections between students' responses, and asking students to agree or disagree with other students' responses. Lastly, five words were explicitly taught every week. By introducing this intervention I sought to better understand classroom factors that could facilitate use of academic discourse and how different features of discourse shift as the teacher strived to engage in such discourse. I sought to determine if the teacher adopted high quality academic discussion by coding for types of interactions and contents of interactions. Features of high quality classroom discussion that were of special interest included increased student participation, extended interactions between teacher and students as well as among students, and explicit instruction and talk about vocabulary.

Student Participation

One important feature of high quality classroom discussion is the balance in the amount of teacher and student talk (Elizabeth et al., 2015; Murphy, et al., 2009). Findings from the current study revealed that the intervention was successful in increasing student participation in the classroom discussion in both phases. Observations prior to the project showed that the students were rarely given opportunities to speak in the class and the teacher dominated much of the classroom talk. Such lack of student participation in classroom discussion was consistent with results from large-scale observational studies (Applebee et al., 2003; Nystrand & Gamoran, 1991). The analysis showed that there was a dramatic increase in students participation in interactions related to content in the intervention. The students participated in 70 percent and 62 percent of the content related talk in intervention phase 1 and phase 2, respectively, in contrast to

only 38 percent being coded as teacher-student content related interactions in the pilot phase. The increase in student participation may be explained by the motivating structure for discussion provided during the intervention. In both phases of the intervention, there were about 25 minutes of designated classroom time where the teacher engaged students in a whole group discussion around an authentic question that did not have prescribed answers (Nystrand & Gamoran, 1991). In the first phase of the intervention, students were asked to vote on authentic questions, first using their clickers (e.g. Was the Consumer Product Safety Commission (CPSC) right to ban Buckyballs?), then by discussing in whole group how they voted and why. Being asked to vote and talk about an authentic question that did not have a correct answer may have contributed to increased interest in participation (Nystrand & Gamoran, 1991). In addition, based on the results from the pilot study, we decided to use clickers to facilitate discussion in the first phase of the intervention. Using clickers may have supported student participation as well. Prior studies that examined the effects of clickers in classrooms reported that the use of clickers was associated with increased student participation, interactivity, and discussion (Beatty, 2004; Crouch & Mazur, 2001; Draper & Brown, 2004; Penuel, Boscardin, Msyn, & Crawford, 2007). In the first phase of the intervention, clickers allowed students to express their opinions anonymously. Then, they were given opportunities to discuss in small group how they voted and why before engaging in whole group discussion. This may have allowed students to feel more comfortable about sharing, thus encouraging participation (Beatty, 2004). In the second phase of the intervention when the researcher support was withdrawn, even though the teacher stopped using the clickers consistently, she continued to provide time for whole group discussion on authentic questions (e.g. Is war ever justified?). These authentic questions open the floor for students to share their opinions and provide opportunities to engage in interactions that go beyond the teacher

evaluating whether or not students have the correct answer (Duke, Pearson, Strachan, & Billman 2011; Nystrand & Gamoran, 1991). Furthermore, in the first phase of the intervention, in order to make discussion accessible for the students who were not used to being asked to explain their thinking, we incorporated discussion topics that were familiar to students (e.g. toys, school rules, etc.). This allowed students to bring in their personal experience to provide elaborate explanation for why they thought some of the school rules were too stringent or why a toy should be banned which may explain why more intervals were coded as having to do with personal experience in the first phase compared to the second. The increase in student participation is consistent with findings from a recent large-scale randomized control study conducted with 1,554 middle grade students in 28 schools (Lawrence et al., 2015). Word Generation (Lawrence et al., 2015) had a similar instructional approach to the present study where students were provided with opportunities to discuss authentic questions in a whole group setting regarding controversial issues (e.g. Do rap music have negative effects on adolescents?). They found that compared to control classrooms, intervention classrooms had significantly greater student engagement in the classroom discourse.

Extended Interactions

Another aspect of high quality classroom discussion is the extended interactions between teacher and students as well as among students (Lawrence et al., 2015; Michaels et al., 2008; Nystrand & Gamoran, 1991; Wolf, Crosson, & Resnick, 2005). Observations prior to the study, as well as the analysis of the pilot study, showed that in addition to the classroom discourse being dominated by the teacher, when students were participating, they were traditional IRE structure interactions. IRE structure interactions are prevalent in classrooms and do not lead to

extended interactions or interactions among students, as they are used by teachers to quickly evaluate students' knowledge (Cazden, 2001). The results showed that while the number of IRE type interactions stayed consistent, there was an increase in the number of extended interactions during the intervention. This change may be explained by the talk-moves the teacher was encouraged to use during the intervention. Examination of the extended interactions that occurred during the intervention showed that the teacher asked follow-up questions, revoiced students' contributions, invited students to respond to one another, and made connections between different students' responses. These were talk-moves that prior studies have associated with high quality discussions, as they open up opportunities for teachers to engage in extended interactions with students as well as facilitate and encourage discussion among students (Duke, Pearson, Strachan, & Billman 2011; Michales et al, 2008; Nystrand & Gamoran, 1991). However, consistent with prior research, results also indicated that the teacher did not take up all talk-moves equally (Michaels & O'Conner, 2015; Wolf, Crosson, & Resnick, 2006). In both phases of the intervention, the most frequently used talk-move in extended interactions was asking follow-up questions, such as asking students to elaborate their thinking. In contrast, talk-moves where the teacher would make connections between students' responses and facilitate discussion among students were not used as often. One possible reason for why the teacher was able to pick up asking follow-up questions most easily may be that it is a talk-move used more often in normal conversations compared to linking students' responses and asking students to respond to one another, which may require more deliberate effort (Michaels & O'Conner, 2015; Wolf, Crosson, & Resnick, 2006). There may be a hierarchy to implementing the talk-moves that begin with the talk-move that are natural in regular conversation. While the teacher may have felt comfortable asking follow-up questions, she may have not been ready to fully implement talk-

moves that solicit and facilitate discussion among students. The teacher may have needed additional support in order to make talk-moves that solicit and facilitate discussion among students her own.

Vocabulary Learning

The final aspect of high quality classroom discussion is opportunities for students to use sophisticated academic vocabulary words (Lawrence et al., 2015; Lesaux et al., 2010; Vaughn et al., 2009). Results provided evidence that students learned the target words better during phase 1 than phase 2. Students made significant gains on the target words compared to the control words in the first phase of the intervention, but they did not make significant gains on the target word knowledge in the second phase. One explanation may be the difference in the extent to which target words were included in the discussion activities. In intervention phase 1, all of the discussion prompts or choices for the prompts incorporated one or more target words for the week (e.g. I think my school has rules that are too *stringent*). Also, the teacher explained the target words used in the prompt and made an effort to use them when engaging students in the discussion based on the researcher feedback after the pilot study. For example, *stringent* was a target word in phase 1 and it was the word learned by the most students in the two phases; Eight out of eleven students gained points where six students went from having no knowledge to partial knowledge (1 point) and two students went from having no knowledge to developed knowledge (2 points). The target word, *stringent*, was included in the discussion prompt where the teacher engaged students in a whole group discussion about whether they thought their middle school had *stringent* rules and regulations. Then, the students also had opportunities to discuss examples of the school rule that they thought were *stringent* and explain their reasoning

in the small group and whole group settings. Students were very engaged and came up with examples of stringent regulations such as not being able to wear flip-flops to school. The students might have learned the target words in the first phase better because they had increased opportunities such as the above examples to hear and use the target words in the context of discussing interesting topics that allowed them to make personal connections. The significant gains in students' vocabulary knowledge in the first phase of the intervention is consistent with results from prior academic vocabulary interventions that provided explicit instruction and opportunities for students to engage with the target words (Lawrence et al., 2015; Lesaux et al., 2010; Vaughn et al., 2009).

The lack of significant growth in students' target word knowledge in phase 2 when the teacher was planning the instruction on her own is interesting, because the teacher continued to have extended interactions using the talk-moves associated with high quality classroom discourse. A closer look at the content of the interactions provides possible explanations. The teacher continued to teach five target words in the beginning of the week. However, she did not create additional opportunities for students to hear or use the words during the whole group discussion. For example, unlike in phase 1, where the whole class discussion prompts were designed to provide additional exposures to the target words, the class discussion in phase 2 was not related to the content of the article from which the target words were chosen. Therefore, the target words were not used at all outside of the vocabulary instruction and reading of the article and the students might not have had sufficient exposures to the target words to learn them. Compared to Phase 1 where there were 7.5 intervals on average coded as having to do with vocabulary, only 1.5 intervals were coded as having to do with vocabulary in Phase 2. It is noteworthy that the teacher decided to participate in the intervention because she wanted to learn

how she could improve the level and quality of the discussion in her classroom. Students' target word learning was a goal imposed upon the teacher by the researcher. Therefore, when I stopped planning with her, she might have not felt the need to ensure multiple exposures to the target words. Also, it is possible that the teacher did not receive enough scaffolding and support in the first phase of the intervention to be able to create opportunities for multiple exposures to the target words in her lessons on her own in the second phase. Rather than handing off planning and implementing lessons abruptly after three weeks of the intervention, it could have been done gradually so that the teacher could sustain all parts of the intervention. The focus on vocabulary instruction disappeared in the second phase, which could account for the lack of significant target word learning.

Limitations

While this study adds to the body of the literature by examining the changes in the classroom discourse structure as a teacher strives to shift her teaching practices from teacher-centered to discussion-based, there were several limitations. First, there were limitations in the classroom discourse quality measure. The classroom discourse quality was measured only using the utterances of the teacher and students who were engaged in the interactions and did not take into account the engagement level of other students in the classroom. Therefore, there may be intervals that were coded as high quality extended interactions, even when there were multiple students who were not paying attention. Because the measure did not capture the engagement level of the whole classroom, it is possible that the actual quality of the classroom discourse was lower than reported. Second, the data from the current study does not allow for making statistical inferences. For example, while the results indicate that the changes in the teacher's discourse

practices throughout the two phases may have had an impact on the students' word learning, the data does not allow me to examine statistical relationships. In addition, there may have been factors other than the intervention or the discourse quality that may have contributed to the students' word learning. For instance, while I tried to choose target words and control words that were similar in difficulties, some words still may have been easier for students to learn than others. Furthermore, because this study was conducted with one teacher, the findings will not be generalizable or representative of all discussion-based intervention in urban school settings. Also, the intervention was implemented collaboratively. Therefore, there is no certainty that the particular strategies I helped the teacher employ would be equally effective in different settings. It is also important to recognize that the collection and interpretation of the data was subjective, and lacked secondary objective data collection, since I helped implement the intervention as well as collected and interpreted the data. Lastly, while we used clickers to create a consistent routine for the discussion activities in the first phase of the intervention, the impact the clicker activity structure may have had, was not examined.

Conclusion

Even though academic language proficiency is critical for students' academic achievement, many classrooms do not provide sufficient support for students to develop academic language skills. This study adds to the growing research in the field for finding ways to support students' academic language development through classroom discussion. Prior studies have examined efforts to increase academic discourse using research methods that include large numbers of teachers and students and rely heavily on student outcome data to evaluate intervention effects. In contrast, this study examines in detail the journey of one teacher, thereby

supplying nuanced details not available from existing studies.

This study presents the changes in the classroom discourse as one classroom teacher in a challenging urban school setting attempted to shift her teaching practices from teacher-directed to discussion-oriented. The results highlight the importance of creating a classroom environment that is conducive to academic language development and revealed the complex interdependency between issues of classroom management, the structure of instructional tasks, and teacher efforts to support sustained talk while also increasing attention to vocabulary learning. The key features of the intervention, which were explicit instruction of vocabulary words, designated class time for classroom discussion that provides motivating structures for student participation resulted in the improvement in the classroom discourse quality.

Furthermore, the teacher in the study volunteered to participate, because she learned about the importance of engaging students in discussion in her master's degree courses, however had difficulties applying the knowledge in her own classroom practices. Therefore, she was very receptive to my offer of assistance and the teacher-researcher collaboration became a critical component of the intervention. It allowed us to create intervention activities that were closely tied to the materials the teacher was required to teach. It also allowed me to understand the difficulties the teacher was experiencing while learning new ways to engage with students during the pilot study and adjust the activity structure for the intervention phase and provide adequate support. As a result, the teacher was able to begin to shift her classroom discourse in the first phase of the intervention as illustrated by the increase in the quality of the classroom discourse measured by the increase in student participation and extended interactions as well as significant growth on students' target word knowledge. In addition, after the three weeks of intervention with my support, the teacher was able to continue to create an environment conducive to student

discussion on her own even when the researcher support was withdrawn in the second phase and continued to have high quality interactions with students. However, the teacher was not able to sustain all aspects of the instruction from the first phase. She did not make conscious efforts to provide opportunities for students to encounter the target words which resulted in students not making significant gains on the target word knowledge.

While the teacher in the study was able to make positive changes in her classroom, it is important to note that it would not be possible for most teachers to receive the same level of support when they are seeking to shift their discourse practices. At the same time, as the teacher in the current study noted prior to the intervention, even though she learned through her coursework that engaging students in discussion was beneficial, she had difficulties applying the knowledge in her own classroom practices. Therefore, simply learning about the importance of high quality discourse in the classroom may not be sufficient for teachers to know how to make changes in their complex classroom environment. Also, as the results indicated, even though the teacher began to make changes in her practice, her use of the talk-moves was limited to asking follow-up questions and revoicing students' responses. The talk-moves that encourage discussion among students were not used as frequently. Next steps would be to understand adequate levels and types of coaching or professional development needed to support teachers in engaging students in discussion as well as using varied talk-moves that facilitate high quality discussion among students. Also, it would be important to understand what effective withdrawal of researcher support may look like as the teacher in the study was not able to sustain all aspects of the intervention when she was planning and implementing lessons independently in the second phase of the intervention.

APPENDIX A

List of Target Words and Control Words by Phase

	Target words	Control words
Phase 1	stringent overtax recall standard flaw neuroscientist staggering prominent aimless consumer counter reboot regulations manufacture	exploit incite prospect
Phase 2	manufacture, recall, staggering, standard, stringent consumer, counter, flaw, prominent regulations	erupt fraught ratification pandemic persist

APPENDIX B

Coding Manual

Interaction Topic

	Explanation
On-topic	Intervals where the talk was related to the instructional activities
Off-topic	Intervals where the interactions was not related to the instructional activities.
No talk	Intervals where there was no talk

Interaction Type – Coded only for on-topic interactions

	Explanation
Teacher-only talk	Intervals where the teacher was the only one talking and students are expected to listen quietly
Teacher reading	Intervals where the teacher is reading aloud and students are expected to listen
Student-only talk	Intervals where one student is talking while other students are expected to listen quietly (e.g. presentation)
Teacher-student quick interaction	Intervals where the teacher-student interaction lasts 3 or less turns in an IRE type format.
Teacher-student extended interaction	Intervals where the teacher-student interaction lasts 4 or more turns between the teacher and one student. Or, intervals where teacher-student interactions lasts 4 or more turns between the teacher and two or more students.
Student-student quick interaction	Intervals where the student-student interaction lasts 3 or less turns in an IRE type format.
Student -student extended interaction	Intervals where the student-student interaction lasts 4 or more turns.

Interaction Content – Coded only for on-topic interactions

On-going activity	Intervals about procedures of the on-going activity
Vocabulary	Intervals about word meanings
Science and World Knowledge	Intervals about English language arts, social studies world, and science knowledge
Academic Discussion	Intervals about how to engage in academic discourse. Metalinguistic talk.
Personal Experience	Intervals about personal experience

Talk-Moves – Coded only for extended interactions

Follow-up questions	Teacher asking questions that are related to students' responses such as asking students to explain why
Revoicing	Teacher paraphrasing students' responses coherently
Facilitating discussion	Teacher asking students to take turns, or asking students to agree or disagree with one another
Making connections	Teacher making connections between different students' responses

APPENDIX C

Example of Intervention Activities

Technology & Globalization Discussion

I like integration of technology into classroom activities

A. Yes
B. No

Share in your small group & be ready to report back

1. One person share (Yes/No & Why)
2. One person from the small group respond
   - I agree with _____ because _____
   - I liked what you said, because _____
   - I disagree with _____ because_____
3. Rest of the group members respond until everyone has shared yes/no & why

What do you think about what the group said?

A. I agree
B. I disagree
C. I have a question
D. I have a comment

One group report back

Schools should have the right to censor what students put on their Facebook, Instagram, etc.

A. Strongly Agree
B. Agree
C. Neutral
D. Disagree
E. Strongly Disagree

Are there any regulations at Bailey middle school you think is too stringent?

A. Yes
B. No

Discuss with your shoulder partner

Do you think there are times that breaking the law/regulation is okay?

A. Yes
B. No

Discuss with your partner

Who do you think is most responsible for children's safety

A. Consumer (ex. Parents)
B. Manufacturer
C. CPSC (Consumer Product Safety Commission)

Do you think putting prominent graphic warning labels on cigarette packages would help people quit smoking?

A. Yes
B. No

REFERENCES

Anstrom, K., DiCerbo, P., Butler, F., Katz, A., Millet, J., & Rivera, C. (2010). A review of the literature on academic English: Implications for K-12 English language learners. *Arlington, VA: The George Washington University Center for Equity and Excellence in Education*.

Applebee, A.N., Langer, J.A., Nystrand, M., & Gamoran, A. (2003). Discussion-based approaches to developing understanding: Classroom instruction and student performance in middle and high school English. *American Educational Research Journal, 40*(3), 685-730.

August, D., Branum-Martin, L., Cardenas-Hagan, E., & Francis, D.J. (2009). The impact of an instructional intervention on the science and language learning of middle grade English language learners. *Journal of Research on Educational Effectiveness, 2*(4), 345-376.

Bailey, A. L. (2007). *The language demands of school: Putting academic language to the test*: Yale University Press.

Barnes, D. (1990). Oral Language and Learning. In S. Hynds & D. L. Rubin (Eds.), *Perspectives on talk and learning: NCTE forum series* (pp. 41). Urbana, IL: National Council of Teachers of English.

Beatty, I.D. (2004). Transforming student learning with classroom communication systems. *EDUCAUSE Research Bulletin, 3*, 1-13.

Boyd, M.P., & Rubin, D.L. (2006). How contingent questioning promotes extended student talk: A function of display questions. *Journal of Literacy Research, 38*(2), 141-169.

Carlo, M.S., August, D., McLaughlin, B., Snow, C.E., Dressler, C., Lippman, D.N., . . . White, C.E. (2004). Closing the gap: Addressing the vocabulary needs of English–language learners in bilingual and mainstream classrooms. *Reading Research Quarterly, 39*(2), 188-215.

Cazden, C.B. (1988). Classroom discourse: Portsmouth, NH: Heinemann.

Chinn, C.A., Anderson, R.C., & Waggoner, M.A. (2001). Patterns of discourse in two kinds of literature discussion. *Reading Research Quarterly, 36*(4), 378-411.

Christie, F. (2002). The development of abstraction in adolescence in subject English. *Developing*

advanced literacy in first and second languages: Meaning with power, 45-66.

Corson, D. (1997). The learning and use of academic English words. *Language Learning, 47*(4), 671-718.

Coxhead, A. (2000). A new academic word list. *Tesol Quarterly, 34*(2), 213-238.

Crouch, C.H., & Mazur, E. (2001). Peer instruction: Ten years of experience and results. *American Journal of Physics, 69*(9), 970-977.

Cunningham, J.W., & Moore, D.W. (1993). The contribution of understanding academic vocabulary to answering comprehension questions. *Journal of Literacy Research, 25*(2), 171-180.

Draper, S.W., & Brown, M.I. (2004). Increasing interactivity in lectures using an electronic voting system. *Journal of computer assisted learning, 20*(2), 81-94.

Duke, N. K., Pearson, P. D., Strachan, S. L., & Billman, A. K. (2011). Essential elements of fostering and teaching reading comprehension. What research has to say about reading instruction, 4, 286-314.

Echevarria, J. (1995). Interactive reading instruction: A comparison of proximal and distal effects of instructional conversations. *Exceptional Children*.

Elizabeth, T., Ross, T., Snow, E., & Selman, R.L. (2012). Academic Discussions An Analysis of Instructional Discourse and an Argument for an Integrative Assessment Framework. *American Educational Research Journal, 49*(6), 1214-1250.

Elleman, A.M., Lindo, E.J., Morphy, P., & Compton, D.L. (2009). The impact of vocabulary instruction on passage-level comprehension of school-age children: A meta-analysis. *Journal of Research on Educational Effectiveness, 2*(1), 1-44.

Fang, Z. (2006). The language demands of science reading in middle school. *International Journal of Science Education, 28*(5), 491-520.

Fang, Z., Schleppegrell, M.J., & Cox, B.E. (2006). Understanding the language demands of schooling: Nouns in academic registers. *Journal of Literacy Research, 38*(3), 247-273.

Halliday, M.A.K. (1978). Language as Social Semiotic: The Social Interpretation of Language and Meaning. *London: Arnold*.

Halliday, M.A.K. (1989). Some Grammatical Problems in Scientific English.

Harmon, J.M., Wood, K.D., & Medina, A.L. (2009). Vocabulary Learning in the Content Areas. In K. D. Wood & W. E. Blanton (Eds.), *Literacy Instruction for Adolescents: Research-Based Practice* (pp. 344). New York: The Guildford Press.

Harmon, J.M., Wood, K.W., & Hedrick, W.B. (2008). Vocabulary instruction in middle and secondary content classrooms: Understandings and directions from research. In A. E. Farstrup & S. J. Samuels (Eds.), *What research has to say about vocabulary instruction. Newark, DE: International Reading Association* (pp. 150-181). Newark: International Reading Association.

Heller, R., & Greenleaf, C. (2007). Literacy Instruction in the Content Areas: Getting to the Core of Middle and High School Improvement. *Alliance for Excellent Education*.

Hiebert, E.H., & Lubliner, S. (2008). The nature, learning, and instruction of general academic vocabulary. In A. E. Farstrup & S. J. Samuels (Eds.), *What research has to say about vocabulary instruction* (pp. 106-129): International Reading Association.

Hirai, D.C., Borrego, I., Garza, E., & Kloock, C.T. (2009). *Academic Language/Literacy Strategies for Adolescents: A" How-To" Manual for Educators*: Routledge.

Hynds, S., & Rubin, D.L. (1990). *Perspecties on Talk and Learning* Urbana, IL: National Concil of Teachers of English.

Lawrence, J.F., Capotosto, L., Branum-Martin, L., White, C., & Snow, C.E. (2012). Language proficiency, home-language status, and English vocabulary development: A longitudinal follow-up of the Word Generation program. *Bilingualism: Language and Cognition, 1*(1), 1-15.

Lawrence, J.F., Crosson, A.C., Paré-Blagoev, E.J., & Snow, C.E. (2015). Word Generation Randomized Trial Discussion Mediates the Impact of Program Treatment on Academic Word Learning. *American Educational Research Journal, 52*(4), 750-786.

Lemke, J.L. (1990). *Talking science: Language, learning, and values* (Vol. 1): Ablex Publishing Corporation.

Lesaux, N.K., Kieffer, M.J., Faller, S.E., & Kelley, J.G. (2010). The effectiveness and ease of implementation of an academic vocabulary intervention for linguistically diverse students in

urban middle schools. *Reading Research Quarterly, 45*(2), 196-228.

Lesaux, Nonie K, Crosson, Amy C, Kieffer, Michael J, & Pierce, Margaret. (2010). Uneven profiles: Language minority learners' word reading, vocabulary, and reading comprehension skills. *Journal of applied developmental psychology, 31*(6), 475-483.

Lindfors, J.W. (1990). Speaking Creatures in the Classroom. In S. Hynds & D. L. Rubin (Eds.), *Perspectives on Talk and Learning* (pp. 21). Urbana, IL: National Concil of Teachers of English.

Long, M.H., & Porter, P.A. (1985). Group work, interlanguage talk, and second language acquisition. *Tesol Quarterly, 19*(2), 207-228.

MacGregor, M., & Price, E. (1999). An exploration of aspects of language proficiency and algebra learning. *Journal for Research in Mathematics Education*, 449-467.

Martin, J.R. (1993). Technicality and abstraction: Language for the creation of specialized texts. In M. A. K. Halliday & J. R. Martin (Eds.), *Writing science: Literacy and discursive power* (pp. 203-220). London: The Falmer Press.

Marzano, R. J. (2004). *Building background knowledge for academic achievement: Research on what works in schools*. Ascd.

Michaels, S., O'Connor, C., & Resnick, L.B. (2008). Deliberative discourse idealized and realized: Accountable talk in the classroom and in civic life. *Studies in philosophy and education, 27*(4), 283-297.

Murphy, P Karen, Wilkinson, Ian AG, Soter, Anna O, Hennessey, Maeghan N, & Alexander, John F. (2009). Examining the effects of classroom discussion on students' comprehension of text: A meta-analysis. *Journal of Educational Psychology, 101*(3), 740.

Nagy, W.E., & Townsend, D. (2012). Words as Tools: Learning Academic Vocabulary as Language Acquisition. *Reading Research Quarterly, 47*(1), 91-108. doi: 10.1002/rrq.011

Nystrand, M. (1997). *Opening Dialogue: Understanding the Dynamics of Language and Learning in the English Classroom. Language and Literacy Series*: ERIC.

Nystrand, M., & Gamoran, A. (1991). Instructional discourse, student engagement, and literature

achievement. *Research in the Teaching of English*, 261-290.

Nystrand, M., Gamoran, A., Kachur, R., & Prendergast, C. (1997). Opening dialogue. *New York: Teachers College, Columbia University*.

O'Connor, M. C., & Michaels, S. (1996). Shifting participant frameworks: Orchestrating thinking practices in group discussion. Discourse, learning, and schooling, 63, 103.

Payne, C. (2008). *So much reform, so little change: The persistence of failure in urban schools*. Cambridge, MA: Harvard Education Review.

Harrison, B., Rappaport, A., & Mulready, A. M. (2012). Flocabulary.

Penuel, W.R., Roschelle, J., & Abrahamson, L. (2005). *Research on classroom networks for whole-class activities.* Paper presented at the Wireless and Mobile Technologies in Education, 2005. WMTE 2005. IEEE International Workshop on.

Scarcella, R. (2003). Academic English: A conceptual framework *The University of California Linguistic Minority Research Institute Technical Report*.

Schleppegrell, M.J. (2002). Linguistic features of the language of schooling. *Linguistics and Education, 12*(4), 431-459.

Schleppegrell, M.J. (2004). *The language of schooling: A functional linguistics perspective*: Lawrence Erlbaum.

Schleppegrell, M.J. (2006). The challenges of academic language in school subjects. In I. Lindberg & K. Sandwall (Eds.), *Språket och kunskapen: att lära på sitt andraspråk i skola och högskola* (pp. 47-69). Göteborg, Sweden: Göteborgs universitet institutet för svenska som andraspråk.

Shanahan, T., & Shanahan, C. (2008). Teaching disciplinary literacy to adolescents: Rethinking content-area literacy. *Harvard Educational Review, 78*(1), 40-59.

Snow, C.E. (2010). Academic language and the challenge of reading for learning about science. *Science, 328*(5977), 450-452.

Snow, C.E., Lawrence, J.F., & White, C. (2009). Generating knowledge of academic language among urban middle school students. *Journal of Research on Educational Effectiveness, 2*(4), 325-344.

Snow, C.E., Porche, M.V., Tabors, P.O., & Harris, S.R. (2007). *Is literacy enough? Pathways to academic success for adolescents*: Paul H Brookes Publishing.

Snow, C.E., & Uccelli, P. (2009). The challenge of academic language. In D. R. Olson & N. Torrance (Eds.), *The camebridge handbook of literacy* (pp. 112-133). New York: Cambridge University Press.

Townsend, D., & Collins, P. (2009). Academic vocabulary and middle school English learners: An intervention study. *Reading and Writing, 22*(9), 993-1019.

Townsend, D., Filippini, A., Collins, P., & Biancarosa, G. (2012). Evidence for the importance of academic word knowledge for the academic achievement of diverse middle school students. *Elementary School Journal, 112*(3), 497-518.

Vaughn, S., Martinez, L.R., Linan-Thompson, S., Reutebuch, C.K., Carlson, C.D., & Francis, D.J. (2009). Enhancing social studies vocabulary and comprehension for seventh-grade English language learners: Findings from two experimental studies. *Journal of Research on Educational Effectiveness, 2*(4), 297-324.

Wolf, M.K., Crosson, A.C., & Resnick, L.B. (2005). *Accountable talk in reading comprehension instruction*. Los Angeles, CA: Center for the Study of Evaluation, Ntional Center for Research on Evaluation, Standards, and Student Testing.

Zwiers, J. (2008). *Building academic language: Essential practices for content classrooms, grades 5-12*: Wiley. com.