ADOLESCENTS' USE OF ACADEMIC LANGUAGE IN HISTORICAL WRITING

By

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To my parents, Emma, and sunshine State

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GLOSSARY

Academic language	Simply speaking, academic language is the language used in academic settings and for academic purposes. It is used interchangeably with academic literacy and academic English in this study. In this study, adopting Systemic Functional Linguistics, academic language is defined as a constellation of language resources that realize more formal and abstract styles and construe academic register in different disciplinary communities. Academic language tends to be more technical, abstract, information-laden, and hierarchically organized than everyday language.
Academic literacy	Academic literacy refers to the knowledge and skills (e.g., speaking, listening, reading, and writing) students need in order to be successful in an academic setting.
Clause	A clause is a unit of grammatical analysis on a rank scale that may include other elements ranking below it, such as a noun group, a verb group and a prepositional phrase (Eggins, 2004). Four types of clauses are discussed in this study: main clause, hypotactic clause, paratactic clause, and embedded clause.
Embedded clause	Embedded clause functions as a nominal element or part of a nominal element within another clause, sometimes as a postmodifier in a noun phrase. It includes restrictive relative clauses, comparative clauses, and nominalized clauses that function as subject or complement.
English language learner (ELL)	An English language learner is a person whose first, home, or dominant language is a language other than English and who is in the process of learning English. ELL can also be used as an adjective to describe a student, e.g. ELL student.
Genre	Genre describes particular types of texts that serve specific social purposes and characterize particular social contexts (Schleppegrell, 2004). Each genre can be identified by its communicative purpose and its linguistic features.
Grammatical metaphor	Grammatical metaphor is a pervasive feature of the academic language that expresses meanings in incongruent ways. For example, when causality is not construed through conjunctions (e.g., *because)* but through verbs (e.g., *lead to*) or nouns (e.g., cause, reason), these verbs and nouns are considered grammatical metaphors.

Lexical Density	Lexical Density is defined as a measure of the number of content words per non-embedded clause in a text. It reveals how tightly the lexical items have been packed in a text and how difficult a text is to read.
Nominalization	Nominalization is the process by which verbs, adjectives, or what would more naturally be presented in another form in interactional language become noun phrases that can be the subject of other verbs or prepositions (Eggins, 2004; Schleppgegrell, 2004). It is also an instance of grammatical metaphor.
Non-finite verb	A non-finite verb (or a verbal) is a verb form that is not limited by a subject, and, more generally, is not fully inflected by categories that are marked inflectionally in language, such as tense, number, and person. An example is: *To succeed takes courage, foresight, and luck*. (Here "*to succeed*" is a non-finite verb that serves the subject of the clause).
Register	Register is defined as "the configuration of lexical and grammatical resources which realizes a particular set of meanings (Schleppgrell, 2004, pp. 45-46). Three variables determine a register: field (what is talked about, the subject matter of the discourse), tenor (participants in communication and their social relationships), and mode (expectations of how particular types should be organized, the format of language, such as the differences between speech and writing) (Halliday & Matthiessen, 2004; Schleppgrell, 2004).

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Despite its importance of academic language, research on academic language is often limited to academic vocabulary and focused on the English language learners. Informed by systemic functional linguistics, this study examined adolescents' use of academic language and the relationships between its use and students' reading ability and their writing quality. Eighty-four ninth-grade students from a public high school in a southeastern state of the United States participated in the study. Three types of analysis were conducted on students' expository essays. First, the essays were rated holistically on a scale of 1-5, with 5 meaning the highest quality. Second, each essay was analyzed for evidence of the following five academic language features: academic vocabulary, expanded noun phrase, nominalization, embedded clause, and lexical density. Third, statistical analyses were conducted to examine the relationship between the use of these academic language features and students' reading ability and writing quality.

Linguistic analysis showed that the students used all five academic features in their essays with varying degrees of proficiency. Whereas features such as expanded noun phrase, academic vocabulary, and embedded clause were used with regularity in

the students' writing, nominalization was used much less frequently and lexical density was low. Multivariate analysis of variance (MANOVA) indicated a significant relationship between the students' use of academic language and their reading ability, defined by their scores on a state reading achievement test. Compared to students of lower reading abilities, students of higher reading abilities used significantly more nominalizations and showed higher lexical density in their writing. However, no significant differences were found between the reading groups in the use of academic vocabulary, embedded clause, and expanded noun phrase. Analysis of variance (ANOVA) showed that higher-quality essays scored significantly higher than lower-quality essays on expanded noun phrase, nominalization, and lexical density, but not on academic vocabulary and embedded clause. Backward stepwise regression analysis revealed that nominalization predicted 43% of the variances in writing quality and that academic vocabulary had a negative relationship with writing quality. These findings suggested that the relationships between academic language use and reading ability and writing quality are complex and warrant further exploration.

CHAPTER 1
INTRODUCTION

In educational research and practice, academic language refers to the language and literacy practices that are specific to the schooling context (e.g. Scarcella, 2003; Bailey & Butler, 2003). Mastering academic language means knowing how to use general and discipline-specific vocabulary, specialized grammatical patterns, diverse language functions and discourse structures in different subject areas in order to comprehend and compose academic texts, acquire new knowledge and skills, and interact with various audiences about a topic. Successful participation in disciplinary learning depends on successful command of the academic language in the discipline (Schleppegrell, 2004).

Academic language is important but challenging for adolescents. At the high school level, students move from a social register to a more complex arena of academic learning. Students leave the sphere of learning materials that closely resemble their everyday lives and enter a more specialized type of learning. Adolescents encounter a greater range of disciplinary texts and subject matter that must be decoded and assimilated in order to acquire and display their disciplinary knowledge. The challenges that academic language presents to adolescents must be overcome in order for them to acquire the knowledge and skills being taught in all disciplines. My study examines high school students' use of academic language in historical writing and the relationship between such use and students' reading ability and writing quality.

Background

Academic language is the language used in academic settings for purposes of teaching and learning. In a society where the need for literacy is growing, learning

academic language is the most reliable way of attaining school academic achievement, career advancement, and socio-economic successes in the United States (Scarcella, 2003). Academic language has also been regarded as one of the key factors affecting the achievement gap that exists between high- and low-performing groups of students (Zwiers, 2007). It poses great challenges to students, especially language and culture minority students, when they advance into secondary schools (e.g., Cummins, 1981; Scarcella, 2003; Schleppegrell, 2003).

Academic language plays a critical role in secondary schools due to the increasing language and literacy demands of secondary content area learning. When students advance from elementary to secondary school, the knowledge that they are expected to learn in content areas is removed from students' personal lives as well as everyday contexts and becomes more and more specialized. The language that constructs such knowledge also becomes more technical, abstract, information-laden, and hierarchically organized (Fang & Schleppegrell, 2008). The lexico-grammatical features and discourse-organizational patterns of content area texts differ significantly from the language patterns in interactional language that students typically encounter during the elementary years or in everyday life. For many students who have little experience with academic language outside school, this challenge is more conspicuous and must be addressed.

The importance of academic language to secondary students has not been recognized and explored to a full extent (Scarcella, 2003). Despite the crucial role of academic language in secondary schooling, the existing body of research focuses on college learners rather than students in elementary or secondary school (Scarcella,

2003). A number of descriptive studies and linguistic analyses study lexico-grammatical features and teachers' expectation on students' writing by analyzing content area reading materials and classroom discourse (e.g., Bailey & Butler, 2007; Bunch, 2006; Schleppegrell, 2001,2004; Zwiers, 2007). But little is known about mainstream students' ability (beyond English Language Learners) to use academic language, such as how they cope with academic language features in academic writing and whether their academic language proficiency meets expectations in academic disciplines. Even less is known about academic language use in content areas such as history.

Therefore, my study fills this gap by investigating how adolescents use academic language in their historical writing and whether such use is related to their reading ability and writing quality. This will lead to an in-depth understanding of students' abilities in coping with academic language features in the context of secondary history classrooms.

Conceptualization of Academic Language

Academic language is a complex concept that has been operationalized from a variety of perspectives and for a variety of purposes. Among them, the cognitive, linguistic, and sociocultural perspectives are the most important groundwork for conceptualizing academic language.

Generally speaking, academic language is the language used in academic context to help students acquire and display knowledge (Chamot & O'Malley, 1994). Cummins (1981, 2000a), drawing on research with bilingual children, attempts to distinguish academic language as Cognitive Academic Language Proficiency (CALP), from everyday language as Basic Interpersonal Communicative Skills (BICS). By interpreting these two concepts into two intersecting continua, Cummins (1981, 2000a) views academic language as the construction of meaning that relies on mostly linguistic

resources and minimum contextual support. He defines academic language as “the extent to which an individual has access to and command of the oral and written academic registers of schooling” (2000a, p. 67). Cummins also lists particular linguistic features such as complex sentences and precise vocabulary as characteristics of academic language. The theory of CALP and BICS lays the groundwork for a comprehensive and applicable definition of academic language.

The conceptualization of academic language also draws on the sociocultural tradition of literacy that emphasizes differences in students’ home language experience and school language. Gee (1996), who holds a sociocultural orientation, believes that Discourse is a combination of language and relevant social practices in a specific group. He claims that language and literacy involves social practices that go far beyond linguistic and cognitive processing. Academic language is regarded here as a type of social practice or Discourse where social interaction plays an indispensible role (Gee, 1996). By differentiating primary Discourse as literacy learned at home and secondary Discourse as literacy learned in school and institutions, Gee (1996) regards academic language as a kind of secondary Discourse that is socially dominant, entails values and beliefs, and excludes others who have not acquired it. Acquisition of academic language thus relies on both acquisition of cognitive abilities, linguistic codes, and participation in specific ways of being and acting in academic context.

The third perspective is a linguistic perspective, in which the most productive line of research draws on Systemic Functional Linguistics (SFL). SFL is a linguistic theory that relates language to context (Halliday & Matthiessen, 2004; Schleppegrell, 2004). In SFL, language is viewed as a resource to make meaning. Linguistic resources are

exploited to express meanings and serve functions based on the social context. By focusing on meaning, the symbiotic relationship between social context and language can be explained. In SFL, academic language is conceptualized as “a set of linguistic registers that construe multiple and complex meanings at all levels and in all subjects of schooling” (Schleppegrell, 2009). From this perspective, academic language proficiency is the ability to exploit a wide range of grammatical and lexical features, semantic, inter-clausal, or intra-clausal, to construct meaning and realize language functions such as constructing and communicating certain kind of knowledge, and describing complex ideas, higher-order thinking processes, and abstract concepts (Chamot & O’Malley, 1994). SFL provides the field with a toolbox to analyze grammatical and discourse features of academic language that may guide academic language conceptualization, instructional methods, and test development.

Academic language comprises a set of linguistic registers to construe multiple levels of social practices and different disciplines. The range and variety of social practices within academic community leads to different types of academic language such as Essential Academic Language (the basic features of academic language that are used across all content areas) and discipline-specific language such as discourse of history. Different types of academic language encompass different knowledge skills and linguistic features. Proficiency in academic language also relies on multiple and diverse competencies, for example, written or oral. Whereas students are engaged in academic reading and writing in school on a daily base, academic language is used in oral situations such as academic discussion about global warming in a science classroom.

The cognitive and sociocultural perspectives are crucial for academic language, and the research in these two dimensions receives more attention (e.g., Scarcella, 2003). On the other hand, the important role of linguistic resources in construing academic language is not fully recognized and the current research from the linguistic perspective of academic language is relatively limited. Therefore my study adopts the theoretical model of SFL and pays full attention to those linguistic features through which academic learning can be expressed.

Statement of the Problem

Academic language plays a crucial role in school success, as it is the foundation of academic learning. Without the proficiency and mastery in academic language, students are very likely to experience difficulty in both understanding content materials and demonstrating content-area knowledge (August & Hakuta, 1997). Academic language has been increasingly cited as a reason for achievement gaps between ELLs and English-proficient students and between high- and low-performing groups of students (Zwiers, 2007). Therefore, understanding students' strengths and needs in academic language is the foremost step in designing subsequent instruction and/or remediation.

The growing literature on academic language has been scattered across a number of different areas, ranging from linguistic analysis of written and spoken texts to descriptive studies of classroom practices. In this body of research, there are a number of gaps that must be addressed.

First of all, current academic language research focuses on English language learners (ELLs) instead of the entire population. Academic language presents a challenge to all students, not just ELLs. There is strong evidence for the claim that

adolescents (both mainstream students and ELLs) are not able to read and write the specialized texts of secondary schooling (e.g., Berman & Biancarosa, 2005; Fillmore & Snow, 2000). Across the whole country, three quarters of 4th, 8th, and 12th graders performed below the proficiency level in a National Assessment of Educational Progress(NAEP) (Persky, Daane & Jin, 2003). The 2002 NAEP report shows that American students are not well prepared for academic writing. Less than a third of students in Grade 4 (28%), Grade 8 (31%), and Grade 12 (21%) scored at or above proficient levels, and for all three writing samples collected only 2% wrote at advanced levels for all of them. These are striking evidences of students' limited academic language proficiencys.

Academic language is challenging to all students for a number of reasons. ELLs' academic language ability is significantly impeded not only by their limited foundation in conversational English but also by their lack of knowledge in specialized registers that tend to manifest the dominant cultures of those inside academia (Zwier, 2008). For many mainstream students, like ELLs, academic language is a second language because many students grow up in discourses that do not prepare them for specialized practices of academic reading, writing, and speaking. Fluency in conversational English, even when English is a first language, does not necessarily translate to a mastery of academic language. To develop proficiency in academic language, the process of teaching and learning must be involved (Gee, 1996). It also relies on sufficient exposure to academic texts (written or oral), extensive reading and writing experience in a variety of academic texts, years of immersion in academic vocabulary and linguistic features that characterize academic language, and opportunities to critically use academic

language in lecture, discussion, or cooperative learning. The assumption that every student with English as the first language can acquire academic language automatically is a misinterpretation of academic language nature. The lack of attention to mainstream students will considerably inhibit students' academic language development and content area learning and thus must be addressed by the research.

Second, the need for my study is established by the fact that current research focuses on college level learners. Current research does not pay much attention to adolescent learners (i.e., secondary students). An extensive literature focuses on English for special purposes and university learners rather than school children and the demands of secondary schooling (e.g., Adamson, 1990). When students advance into secondary schools, the knowledge becomes more and more specialized, and the complexity of language increases dramatically as well. Although the demands of academic language are extensive for secondary students, there is a lack of attention to students' needs in developing academic language in secondary schooling. Teachers often spend most of the time in teaching content knowledge and much less time in developing academic language. As the experts in their respective content areas, teachers expect their students to display their learning in a way that is appropriate in their specific discipline. However, these expectations about language use are not always made explicit (de Oliveira, 2011). Some teacher is not trained to identify and explain the important academic language features to students, which presents more difficulty to secondary students in content area learning (Bruna, Vann, & Escudero, 2007). Due to these challenges, secondary schooling is a significant phase to prepare

students for intensive disciplinary learning at college level. Therefore, more attention must be paid to academic language use in secondary schooling.

Third, current academic language research looks at academic language primarily from the perspective of vocabulary as if academic language consisted solely of vocabulary. But academic language is more complex than that and should be examined using a more comprehensive approach. Academic vocabulary is the words students must master in order to comprehend the concepts and display their acquisition of these concepts in any specific discipline (Beck, McKeown, & Kucan, 2002). As lexical choice plays a critical role in academic language, researchers pay close attention to academic vocabulary instruction and believe that academic vocabulary intervention can have a positive effect on academic language development (Calderón, 2007; Snow, 2008). However, academic vocabulary instruction alone is not sufficient for academic language development. A mere focus on academic vocabulary will impede students' academic language learning (Bruna et al., 2007). The nature of academic language including its grammatical features and discourse structures must be identified and taught to develop students' academic language (Bruna at al, 2007). Current research has identified many of the distinctive language patterns in academic texts (e.g., Halliday, 2008; Schleppegrell, 2001). By comparing a corpus of oral and written texts, researchers (Biber, 1988, 1995; Halliday, 1985; Schleppgrell, 2001) have identified a number of lexicogrammatical features of academic language and discussed how these features are different from the language of everyday social language. Although we know that students must use these academic language features successfully to fulfill the reading and writing demands in academic communities, the degree of secondary students'

success in coping with academic language in content areas remains an unanswered question and thus must be addressed.

In addition, current academic language research focuses on published materials rather than students' actual use of academic language. It, therefore, does not shed light on how academic language use relates to students' reading and writing ability, which is critical to the design of effective instruction and remediation. When studying academic language, researchers usually analyze published materials including state standards, textbooks, reading materials, and oral texts transcribed in teachers' instruction and teacher-student interaction. It is significant to know secondary students' actual use of academic language and how the use interacts with students' reading abilities. Although we assume that students with higher reading abilities can handle academic language more successfully, current research has not revealed how students' use of grammatical and lexical resources differ across reading groups. A comprehensive analysis of students' writing allows more insight into how students with different reading abilities grapple with academic language demands and exploit features at semantics, syntax, and pragmatics levels to represent their learning in content area knowledge.

Another unknown aspect is the relationship between this use of academic language features and overall writing qualities. In the current research, whereas some academic language feature(s) is/are usually analyzed as an indicator of students' academic language ability (e.g., Coffin, 2006b), how academic language features affect the overall writing quality is unknown. We do not yet know how the use of academic language features differ across various writing qualities and predict these writing qualities. Knowing the interrelationship between students' use of academic language

features and their reading abilities and academic writing qualities will contribute to the ongoing discussion regarding adolescent students' literacy development in content area learning. Therefore, it is a research gap that must be addressed.

Last but not least, academic language research typically involves small-scale studies (e.g., case studies of 1-5 students). Due to the variety and complexity of academic language features, researchers tend to employ descriptive studies in analyzing these texts. Although these studies provide in-depth information about the demands of academic language, larger-scale studies with larger groups of participants may provide a more comprehensive picture of adolescents' academic language competences. A method that enables a more convenient and practical analysis and interpretation of academic language features in a large number of writing samples should be generated to better guide operationalization and practice in academic language.

Overall, the current research is still evolving to build a thorough understanding of academic language. Although a theoretical groundwork has been established to suggest the challenge of academic language for both mainstream students and ELLs, the essential role of academic language features for secondary mainstream students has not been fully acknowledged in either research or instructional practice. The current literature indicates the nature of academic language and the important role of academic language features such as academic vocabulary. However, more attention should be paid to a comprehensive conceptualization of academic language and all linguistic features of academic language. The current body of empirical studies does not provide a detailed picture of mainstream students' capability in employing academic language in

content area learning. We also know very little about the interrelationship between use of academic language features and students' reading abilities. Other questions of interest include how mainstream students use academic language features to represent their content area knowledge, how the disciplinary community evaluates these students' academic writing, and how these two aspects interact with each other. All of the areas mentioned above must be investigated in order to contribute to the conceptualization of academic language, which would then inform instructional and professional development decisions. A comprehensive and in-depth knowledge of students' abilities in coping with academic language may help content area teachers recognize their students' strengths and needs in academic language development. This knowledge may also guide teachers to model and scaffold academic language and content area instruction.

Research Questions

The overarching goal of my study is to examine evidence of academic language in ninth graders' history writing and explore if such use is in any way associated with their reading ability and writing quality. Three research questions will be examined:

What academic language features can be observed in 9th grade students' historical writing and what functions do these features serve in historical meaning making?

Does academic language use differ according to students' reading ability?

Does academic language use differ according to the quality of students' historical writing? That is, to what extent does the use of academic language predict the overall quality of students' historical writing?

Significance of the Study

My study intends to fill the gap of existing academic language research that focuses on college students but not high school learners, academic vocabulary rather

than linguistic features, and the language resources that students must know instead of how much they know about them. My study will also shed light on the relationship between academic language use and reading abilities as well as writing qualities. Overall, by focusing upon secondary students' academic writing in world history classrooms, my study is designed to lead to further discussion regarding adolescents' academic language development.

First of all, my study enables educators and researchers to identify what adolescents know and can do with academic language in the current learning context so that instruction or remediation can be designed to meet their needs. The focal population in the present study is secondary students who have diverse reading and writing abilities. The participants were in their first semester of high school and experiencing the transition from middle school to high school when my study took place. My study offers insight into secondary students' actual academic language competences as seen in this learning context by examining how they cope with academic language in historical writing. My study examines secondary students' academic writing in real content area context and demonstrates students' uses of essential academic language features, such as academic vocabulary, embedded clause, expanded noun, nominalization, and lexical density. The results will address the question of whether secondary students can handle academic language features successfully in historical writing. The analysis of students' academic language proficiency in my study may help educators and researchers understand the demands of academic language features on secondary students. This can lead to meaningful discussion regarding instructional practices that address students' needs.

Second, the current study emphasizes a variety of academic language features, rather than academic vocabulary only. Within the framework of SFL, beyond the analysis of academic vocabulary, my study examines essential academic language features, including embedded clause, expanded noun, nominalization, and lexical density. A comprehensive picture with respect to students' academic language proficiency can then be obtained. Our understanding of students' academic language proficiency may move beyond word level to sentence and discourse level. Through the analysis of a variety of academic language features, we can gain understanding regarding the roles and functions of each feature and its specific challenge for secondary students. My analysis can then provide rich and constructive information regarding the complexity and abstractness of academic language. The knowledge of a variety of academic language features can provide teachers and students with tools to analyze linguistic features of academic language so that they can be more explicitly and directly taught and learned in classrooms.

Last but not least, the connection between the evidence of academic language use and reading and writing abilities will be one of the most important contributions of my study. By examining the relationship between academic language uses and reading ability, my study will shed lights on the actual challenges of academic language to students of different reading abilities. This can test the assumption that students with higher reading abilities exhibit better command of academic language compared to students of lower reading abilities. The results may shed light on whether students of high reading abilities still need support in academic language and what support different reading groups need specifically. In my study, the relationship between writing quality

and students' use of academic language features will be discussed. My goal is to understand what academic language features can affect writing quality and what the actual influences are. Through these discussions, my study will help practitioners, researchers, and policy makers reconsider the academic language challenges for secondary students and how these students are doing with academic language. With this information, practices, programs, and policies can be modified to address students' needs in developing academic language and content area learning.

Limitations and Delimitations

One limitation of my study is in the sample characteristics, as all participants were selected from one school and one grade level. I recruited the participants from three world history teachers' classes. The convenient sampling method limited the interpretation and generalization of final results. The sample size was medium (N=84). Nevertheless, I purposefully selected a research site that was a public school with a diverse population. Participants in this study were equally distributed based on gender, socioeconomic status, ethnic groups, and academic achievements to allow for maximum variation. This delimited the deficits in data sampling. Furthermore, no conclusion will be made to generalize to a bigger population. The findings of this study can only be interpreted and generalized in a similar type of context.

Secondly, a number of variables such as different teachers' personal styles, classroom instruction, and different levels of content knowledge were involved in explaining the differences in academic language use among students, which may affect the interpretation of this study. In order to control these factors to the greatest extent, the researcher worked with three teachers who were involved in this study on their curriculum to ensure they were teaching similar content. The researcher also visited

every class frequently to observe the delivery of the content. However, there were still other factors such as teachers' instruction involved. In three levels of classes (Regular, Honors, and Advanced Placement class), teachers taught the same content at different depth. For example, the teacher of the Honors history class conducted more in-depth discussion regarding Greek culture compared to Regular class. Therefore, it was impossible to eliminate the variance among different types of classes even when all three classes were learning the same content. This is, therefore, a factor that must be taken into consideration when the results of this study are interpreted.

Last but not least, a limitation in my analysis was that I did not include all aspects of academic language and all academic language features. Since academic language is a complex construct, it is impossible to analyze all aspects and all features in one study, which may also affect the conceptualization of academic language. To address this limitation, I conducted literature review to explore the academic language features that best represent the challenge of secondary content area learning. The factor that my analysis only included a number of academic language features should be in the foreground of any interpretation of the results in the present study.

Overview of the Study

The purpose of my study is to examine the use of academic language in adolescents' historical writing and explore the relationship between the students' academic language use and their reading ability as well as the writing quality. My study draws both its theoretical framework and analytical methods from Systematic Functional Linguistics to analyze and discuss 84 adolescents' historical essays. In Chapter 2, I will first review what academic language is (i.e., the three perspectives on academic language) and what research says about the relationship of academic language to

school learning and success. Then I will present the research methods used to study academic language in Chapter 3 and findings in Chapters 4. Discussions and implications of these findings for research and instruction will be discussed in Chapter 5.

CHAPTER 2
LITERATURE REVIEW

In this study, secondary students' use of academic language features in historical writing will be examined. This chapter describes how the literature review was conducted, beginning with the conceptualization of academic language. It then presents a critical examination of each area of inquiry, ranging from the cognitive perspective, sociocultural perspective, to sociolinguistic perspective. Finally, it weighs the evidence in support of relationships between teaching practices and academic language features and includes a summary of this research base. The intent of this literature review is to build a comprehensive and accurate conceptualization of academic language and identify what is known and what has yet to be done in the study of academic language development.

Conceptualizing Academic Language

Three paradigms grounded in different theoretical frameworks are cognitive perspective: Cummins' basic interpersonal communicative skills (BICS) and cognitive academic language proficiency (CALP); sociocultural perspective: Gee's Primary and Secondary Discourse; and linguistic perspective: Halliday's Systemic Functional Linguistics (SFL). In order to understand these three perspectives, I will illustrate each perspective's basic descriptions, important studies and critiques, and its relevance and contribution to understanding academic language.

Cognitive Perspective on Academic Language

Cummins's early work (1981) is one of the first approaches that define academic language. He focuses on the difference between social language and academic language in cognitive and contextual demands. He uses the dichotomy between BICS

and CALP to discuss the nature of language proficiency in the field of second language acquisition (SLA). Cummins revisits his own work in 2000 but the primary theoretical framework remains the same.

According to Cummins (1981, 2000a), BICS is less complex and abstract than CALP and usually accompanied by extralinguistic and contextual clues. It is usually used in less formal settings such as family conversations. CALP tends to be complex and abstract with limited contextual and extralinguistic clues. It is usually the language of school settings. Cummins (2000a) also claims that language supported by contextual clues is easier to understand than language without such clues, and language on familiar topics is easier than language that contains new or difficult information. Moreover, the speeds at which BICS and CALP are acquired vary as well. In his study of immigrant students in Canada, Cummins (1981) states that ELL students learn conversational skills in English in about two years but typically needs five to seven years of exposure to English in school before these ELLs are considered as academically successful. In other words, students learning a second language need more time to acquire academic language than to acquire social language.

On the basis of the dichotomy between BICS and CALP, Cummins (2000a) defines academic language proficiency as the extent to which an individual can access and master the oral and written academic registers of schooling. Gaining control on academic language means that students are capable of making complex meanings explicit in oral or written mode of language without resorting to contextual or paralinguistic cues such as gestures and intonation (Cummins, 2000a). To achieve that, students must be acquainted with an ever-increasing vocabulary, concept load involving

words specific for school contexts, different syntactic features and discourse conventions. Basically, students need to acquire all features of academic language to function successfully in academic tasks.

Knowing the distinctions between CALP and BICS has numerous implications, particularly for ELLs. For instance, learning in content areas does not necessarily take place even though students can communicate fluently in daily life. In content area learning, language can be more abstract and complex with unfamiliar vocabulary and syntactic features and students may lack extralinguistic support. Also it is not sufficient for ELLs to learn academic language and content knowledge in English language class. ELLs must learn content-specific language in content areas. Modifications to the traditional ESL curriculum during the early 1980s have been made to combine content learning and academic language development in order to provide ELLs specific instruction on CALP in various content areas. These modifications are one of the direct implications of Cummins' model.

Cummins' theoretical approach to conceptualizing academic language has been criticized for a number of reasons. Martin-Jones and Romaine (1986) point out Cummins' inadequate linguistic modeling. They claim that without conducting linguistic analysis on social and academic discourse Cummins fails to establish an adequate model of social language and academic language. Criticism has also been made that the dichotomization between social language and academic language cannot explain the complexities of language and literacy. Bailey (2006) suggests that BICS is not necessarily less cognitively demanding than CALP. For example, to contrive plausible excuses, negotiate and persuade in everyday life involves BICS, it takes more mental

effort and cognitive ability than comprehending a paragraph on Civil War in a 5th grade social studies textbook (CALP). BICS can exist within context-reduced settings. Children's make-believe play, for example, involves complex and highly abstract reasoning. Schleppegrell (2004), on the other hand, points out that CALP is not necessarily more linguistically difficult than BICS. It is also inaccurate to describe academic language as decontextualized (context-reduced) because all language is produced and used within a context. What differentiate academic language from interactional language is the grammatical elements that are used to construe the context (Schleppegrell, 2004). Furthermore, with the growing recognition of the sociocultural nature of literacy, Cummins has been criticized for disconnecting learning to read and write from the sociolinguistic experience of everyday life and for attributing higher status to CALP (e.g.,Wiley, 1996). Further critiques (e.g., MacSwan, 2000) argue that through the distinctions between BICS and CALP Cummins attribute ELLs' academic failure to their low cognitive/academic proficiency rather than to inadequate schooling, thereby promoting a "deficit theory" explanation for ELLs' underachievement.

To address the critiques, Cummins (2000a) revisits his theory and discusses many of the above-mentioned issues. First of all, he conceptualizes the differences between BICS and CALP in linguistic terms to address the criticism of Martin-Jones and Romaine (1986). Citing Biber's (1988, 1995) detailed empirical analysis of a large corpus of spoken and written textual materials, he lists three major dimensions of the differences between written and spoken materials. These three dimensions are labeled as *interactive* vs. *edited text* (contrast features showing high personal involvement with those which allow editing; first and second person pronoun is an interactive feature);

abstract vs. *situated content* (features such as nominalization and passive voice make a text abstract), and *reported* vs. *immediate style* (past tense, perfect aspect, and 3rd person pronouns that can be referred to narrative and non-narrative contexts and reported style). A number of linguistic features that are characteristic of written and spoken texts are also listed. For example, high personal involvement and real-time constraints are characteristic of spoken text, whereas nominalizations and prepositions contribute to detachedness in written texts. Cummins (2000a) suggests that these distinctions between oral and written language are consistent with the broad distinction between CALP and BICS. This type of linguistic analysis is a preliminary analysis of linguistic differences between social language and academic language rather than an established linguistic model of academic language.

While his early work is more situated in cognitive perspectives, Cummins incorporates the sociocultural theory of literacy by claiming that language development and language proficiency should take into account the context in which language is used (Cummins, 2000a, 2000b). In different contexts, such as academic settings and everyday life, specific linguistic registers are required for adequate and successful functioning. Cummins (2000a) proposes that language proficiencies are “intervening variable” (p. 96) that mediates students’ academic development. Language proficiencies are shaped by and specific to the contexts in which they are used. Although academic language is not linguistically or cognitively superior to any other forms of language, it is related to academic success in the context of schooling. Reading and writing skills are important to CALP, but CALP consists of more than reading and writing. For example, students must exhibit their CALP in an academic presentation. Cummins focuses on

how providing students' access to academic registers of languages can help bilingual students achieve school success to fight for the coercive power relationship in this society. Cummins (2000a) also extends his focus on ELL to all students by claiming that the distinction between BICS and CALP reflects a pattern of language development that also exists in native English speakers (Cummins, 2000a).

Cummins' analysis of BICS and CALP examines language proficiency through context, register, and cognitive as well as linguistic features. His model has a profound impact in the field of second language acquisition. Cummins' model takes into account the different contexts of social language and academic language. However, the complexity of context such as different disciplines has not been studied to explain the complexity and variability of language proficiency. For example, writing a narrative that describes Shakespeare's life and works in a language arts classroom and a report that presents the result of an experiment in a science classroom pose distinct language demands on students, although both are complex, cognitively demanding tasks. Cummins also pays little theoretical attention to monolingual or mainstream students and thus its implication for students in mainstream content area classrooms is very limited.

Sociocultural Perspective on Academic Language

Academic language is also conceptualized from a sociocultural perspective, with James Gee (1996) as the key representative. In exploring the use of academic language in school settings, James Gee (1996) conceptualizes academic language as a family of social languages that are related to each other. However, this social language is significantly different from the social language in Cummins' paradigm. For Gee, social

language refers to how language is used to carry out socially situated activity and realize socially situated identity.

Gee's distinction between Discourse (with a capital D) and discourse (with a lower-case d) is based on the definition of social language. Specifically, Gee (1996) defines "discourse" (with a lower case "d") as a social language or language-in-use through which activities and identities are enacted. Discourse (with a capital "D") is a much wider concept involving non-language elements. "Discourse" (with a capital "D") means "a socially accepted association among ways of using language, of thinking, and of acting that can be used to identify oneself as a member of a socially meaningful group or a social network" (p. 131). It is an "identity kit" through which community members know how to act and talk in the specific community so as to take on a particular role that others will recognize.

A very important implication of D/discourse is that discourse is a constituent element of Discourse. A discourse is a social language that is associated with a specific Discourse. Different discourses are reflected in different grammatical and lexical features. Knowing a discourse means knowing how to use these grammatical and lexical features that are characterized by associated Discourse and thus become a member of this Discourse.

On the basis of "discourse" and "Discourse", the concepts of Primary Discourse and Secondary Discourse are introduced (Gee, 1996). The Primary Discourse is one's "first social identity." It is "those to which people are apprenticed early in life during their primary socialization as members of particular families within their sociocultural settings" (Gee, 1996, p.137). All humans, barring serious disorder, get one form of discourse

through acquisition, which is usually their Primary Discourse. Primary Discourse varies among different socio-cultural groups even among all native speakers of English. For example, lower socio-economic black children use English to make sense of their experience differently from middle class children and therefore they have different Primary Discourses (Gee, 1996).

Secondary Discourses are those to which people are apprenticed as part of participation and their socialization in a variety of local, state, and national groups and institutions outside early home and peer-group socialization. Secondary Discourses build on and extend the uses of language acquired as part of our Primary Discourse. All Secondary Discourses involve uses of language, either written, oral, or both. This is called “secondary uses of language.” For Gee, literacy is the mastery of a Secondary Discourse (Gee, 1996).

As Gee (1996) points out, Primary Discourse and Secondary Discourse constantly negotiate and contest in society. Primary Discourse serves as a framework for future acquisition and learning of other Discourse. Other Discourses influence Primary Discourse as well. Primary Discourses and Secondary Discourse are compatible to different extents depending on different social groups.

Within the framework of Discourse, by comparing the story-telling transcripts of an Anglo-American, middle class student and an African-American student from a lower socioeconomic home, Gee (1996) suggests that it is a great advantage for learning when the Secondary Discourse is more compatible with the Primary one. The analysis shows that language features construe the social relationship and students’ performance is shaped by their Primary Discourses. According to Gee (1996), many

African-American people have a Primary Discourse that emphasizes mutual participation and social networking. In this Discourse, authoritarian texts are not privileged and written words are not over people's voices. On the other hand, white, middle class culture is usually more connected to the western middle class and modern capitalism that have set the foundation of middle class primary socialization as well as modern formal schooling. Therefore, it is not surprising that the white students' story telling was more rewarded in the described school context. Based on this analysis, Gee suggests that students' success in school is related to how much students' home-based Primary Discourse is melded with school-based Secondary Discourse. Students also benefit from this homology in the future jobs and the social worlds.

In terms of how people come by D/discourses, Gee (1996) illustrates different processes in terms of "acquisition" and "learning". Acquisition is a process of gaining something that is necessary for functioning in a particular situation by repeated long-term exposure. Accordingly, learning "involves conscious knowledge gained through teaching" (1996, p. 138), but this learning does not have to involve someone called a "teacher." Learning involves reaching an understanding (or partial sense) of meta-knowledge. It is tied to having a conscious awareness of the process by which one is gaining this understanding. While some cultures highly value acquisition in which children are exposed to adults modeling, some other groups highly value teaching by explanation and analysis.

For anyone living in our society and culture, both acquisition and learning need to happen to get full access to a discourse and a Discourse. Nevertheless, D/discourses are mastered by acquisition instead of overt instruction. To fully attain a D/discourse,

students need to be acculturated or apprenticed into social practices by someone who has mastered this D/discourse via scaffolding and interaction. While modeling and instructional guidance are important, D/discourses are typically acquired through immersion in meaningful social practices. Still, in order to critique one D/discourse and further change it, learning must take place to facilitate meta-level knowledge in both D/discourses.

Within theoretical framework of Primary Discourse and Secondary Discourse, Gee (2004a) discusses further about academic language and attributes high significance to it by claiming that, although alphabetic code is important, more students fail in school in the long run because they cannot cope with academic language rather than because they cannot decode words.

According to Gee (2004a), English is a language that is composed of a myriad of social languages. Academic language is defined as a large family of related social languages or discourses that are associated with Secondary Discourse of schooling. As language is always situated within particular ways of communicating and understanding information, academic language is associated with, but not limited to, grammatical patterns. These grammatical patterns construct particular identities and activities in the context of academic disciplines. Gee (1996) suggests that disciplines such as mathematics, science, and art, have their own Discourses that students must learn in order to succeed in those disciplines.

Since academic language represents a variety of discourses situated in academic Discourse, learning academic language is more than just learning language-in-use, such as discrete language rules. It is participating in a Secondary Discourse that

involves interaction with others who do not necessarily share the same knowledge and experience (Gee, 1996). In secondary content area classrooms, students learn to utilize a variety of lexical and grammatical choices to construct social practices and relationships that fit Discourse of disciplines.

Gee (1996) and other scholars (e.g., Delpit, 1988) consider features of academic language as meta-knowledge or power code that constitutes a style that is designed to exclude the marginalized outsiders and to enhance the status of powerful insiders. Gee (2004a) points out that students will acknowledge the value of learning academic social language only if they value the socially-situated identities and activities where academic language is situated. To many students, learning academic language represents a big loss in their primary discourse and identity. Their life world or primary Discourse is disassociated with the middle class Discourse that historically share interest and values with some academic specialist domains. For these students, learning to value the identities and practices (but not deny primary identities) in an academic Discourse is the foremost step of learning academic language. Furthermore, Gee (1996, 2004a) emphasizes that schools should teach students to reflect on and critique the dominant Discourse in school and the Discourse maps of their society and the wider world. Diverse Discourses should be juxtaposed to each other in schools to allow students to understand them at a meta-level so that students will be able to transfer and vary their Discourse, and create new Discourses. This meta-knowledge, Gee (1996) believes, is the core ability that school should inculcate and explicitly teach.

As Gee (1996) regards science as the subject that represents best the demands of academic language, he specifically analyzes the subject of science to study features

of academic language by conducting a preliminary analysis on the style of language. Two examples from a student's two drafts on the topic of Albinism were provided:

> *First Draft:* Then to let people know there are different types of Albinism, I will tell and explain all this.
>
> *Second Draft:* Finally, to let people know there are different types of Albinism, I will name and describe several.

In Gee's analysis, how the author situated the meaning of "*tell*" and "*explain*" is inconsistent with the situated meaning of "*different types of Albinism.*" When discussing about Albinism in academic writing, apparently "*name*" and "*describe*" are more appropriate, if not the best, words that situate the meaning in an academic way.

According to Gee, features of academic language, or meta-level cognitive and linguistic skills must be built into the curricula and integrated with acquisition in practical ways. Students' primary Discourse and the language exposure they encounter prior to school years play a part in their readiness for academic language. Those who do not have much home experience with interactive "book talk" and extended single-topic presentation must be exposed to a variety of written and spoken models of language in content areas and develop an academic identity.

Nevertheless, Gee (1996) suggests that the language models of academic language cannot be overtly taught. Students must be apprenticed into social practices and interaction because scaffolding plays a crucial role in learning and acquiring academic language. Delpit (1998) criticizes this stance by rejecting the idea of apprenticing students of color and poverty in academic language. Delpit (1998) maintains that every Discourse has its culture codes. For school Discourse, both the "superficial features" of middle class Discourse -- grammar, style, mechanics, features -- and the more subtle aspects of dominant Discourse would contribute to students' school

success. Those who do not have access to the dominant Discourse would never get these subtle aspects without explicit instruction about these codes.

In more updated literature, Gee (2004a) addresses this issue by claiming that some explicit instruction is needed when interactive experience can not provide students with sufficient understanding of academic language. He provides example that, in face-to-face situations, teachers and students tend to use truncated language including deictic, vague references, and ambiguous structures. Interlocutors tend to use numerous pronouns to refer to persons within the context. The cause, in a cause-effect, is sometimes implied as the interlocutors who both know the context. In written models of academic language, expanded forms of academic language appear in the reading and writing in overt ways to make meaning understood by publics, which are valued by evaluation in school. Any pronoun must be specified to a participant in the text. Any cause and effect must be listed to build a cause-effect relationship. Therefore, students who do not have much experience with this elaborated form of language must be involved in explicit discussion concerning the identification and uses of academic language. To Gee (2004a), both explicit attention to expanded forms of academic language and interactive experience of academic language practice are necessary for students to acquire academic language. He also argues that schools are not doing enough to support students in acquiring academic language and that students need extensive authentic interactive experiences with proficient member from academic Discourse community.

Overall, Gee's theory of "Discourse" (with a capital "D") and "discourse" (with a lower case "d") builds groundwork for discussing academic language. Academic

language is an array of language and linguistic features. It is a “discourse” (with a lower case “d”) that is situated in Discourse (with a Capital “d”) of secondary content areas. Direct and explicit instruction, interaction and scaffolding should be combined to develop academic language. As language patterns are associated with Discourses that are situated in context, the Discourse of academic language varies with different disciplines and subject areas. To have full access to academic language and academic Discourse, students need to learn a range of power codes or meta-knowledge including the lexical and grammatical features of academic language. Nevertheless, Gee’s analysis of D/discourse does not provide us with a tool to analyze these lexical and grammatical features of academic language and build connection between these features and their social functions.

Functional Linguistics Perspective on Academic Language

A more powerful model for conceptualizing academic language is in systemic functional linguistics, or SFL (Halliday & Matthiessen, 2004). SFL provides us with a definition of academic language, tools to analyze grammatical and lexical features of academic language in different content areas, and insights into teaching and learning academic language. In this section, an introduction of SFL including some significant concepts such as register and genre will be presented. A preliminary analysis of lexical and grammatical features of academic language will also be developed.

SFL is a language theory that focuses on the context, social purpose of language and the relationship between text and context. It is introduced by Australian linguist M.A.K. Halliday (Halliday & Matthiessen, 2004). In this theoretical framework, literacy is viewed as a semiotic, a form of social action and a process of meaning making in which language and context co-participate. Language use is based upon and also constrained

by context. Language consists of various grammatical and lexical choices that construct different meanings for different purposes. SFL explains the symbiotic relationship between social context and language, enabling a direct and explicit connection between grammar, lexicon and discourse features and social function.

From a SFL perspective, every text constructs three kinds of meaning – the experiential (the content or main idea of a text), the interpersonal (the interpretation and judgment presented in a text), and the textual (the way a text is organized as a coherent message) (Schleppegrell, 2004). These meanings are constructed in different configurations of language resources. Distinct language systems allow different kinds of meaning to be made to meet a variety of purposes in various contexts. They can be used to represent personal experience of the world; establish and maintain relationship; and form texts. The way these language resources are used varies in relation to the context from which the text emerges. Language enables the learner to achieve the social goals such as asking for directions or answering math questions (Christie & Derewianak, 2008).

Experiential, interpersonal, and textural grammatical features work together simultaneously to realize context of situation (Schleppegrell, 2004). In SFL, the manifestation of the context of situation is referred to as register. Register is defined as "the configuration of lexical and grammatical resources which realizes a particular set of meanings (Schleppegrell, 2004, p. 45-46). Three variables determine a register: field (what is talked about, the subject matter of the discourse), tenor (participants in communication and their social relationships), and mode (expectations of how particular types should be organized, the format of language, such as the differences between

speech and writing) (Halliday & Matthiessen, 2004; Schleppgrell, 2004). This means that register is characterized by some combination of grammatical and lexical features that differ in different contexts. Diverse registers are also more or less valued (Schleppegrell, 2004). In current U.S. society, academic register is highly valued particularly in the school context. Moreover, the degree of effectiveness of different grammatical choices realizing particular text types in certain situation also varies (Schleppegrell, 2004). In other words, a text that realizes the expected register in a certain context is considered more effective than the text that does not realize the register.

Academic language: register of the school context

Based on the construct of register, SFL sees academic language as means of making meaning in the school context (Schleppegrell & Colombi, 2002). Respectively, the field of discourse is realized in experiential resources; the tenor of discourse is realized in interpersonal resources; and the mode of discourse is realized in textual resources (Schleppegrell, 2004). Only through this "three-way perspective" (Schleppegrell, 2004, p. 46) can the link between meaning and function be analyzed through grammatical expression (Schleppegrell, 2004). This three-way perspective of SFL thus serves as the foundation for the following comparison between two texts.

These three meanings of academic language are realized through a variety of grammatical features, such as the use of clause combining strategies (the type of clause combination), nominalization (the use of a verb or an adjective into a noun so that the word can act as a constituent of a clause), use of noun (simple or expanded noun), and lexical density (the measure of the density of information in any passage of text). These features will be discussed in detail later.

Text (1) is selected from a scientific text "*What's So Hot about Peppers*". This text is a selection from the book *Preparing for FCAT Reading (Grade 9)* (Spigler, 2005). In this book, a variety of reading texts - mostly in science, history, and language arts - are included to help students practice reading to prepare for Florida Comprehensive Assessment Test (FCAT), a standardized test of reading in the state of Florida. Text (1) represents the text that students encounter regularly in secondary schooling, and therefore serves as an example of academic register. Text (2) is selected from the transcription in Gee's (1996) analysis of the story sharing of an Anglo-American, middle-class, seven-year-old girl, Mindy. It is considered an appropriate and successful example of sharing-time, which in here is an example of interactional register. Please refer to Table 2-1 for the two texts.

Overall, text (1) is denser, more complex, technical, and abstract, which is the type of written text that secondary students encounter in their content area classrooms. To the contrary, text (2) is clearly a dialogue. Whereas this is just an overall impression, SFL enables us to analyze the differences in register features between these two texts and provide evidences to support this impression. As the first step, both texts can be segmented into clauses as in Table 2-2.

Next, using a three-way perspective of SFL, the grammatical features that realize three different kinds of meanings can be analyzed:

Experiential meaning

The experiential meaning refers to the content or main idea of a text. It is usually realized through vocabulary choices (technical vocabularies vs. non-technical vocabularies; long nouns vs. simple nouns). In terms of vocabulary, Text (1) draws on an abstract and technical lexis (e.g., *stimulus, endorphins, chemical, substance*), while

the lexical terms in Text (2) are non-technical and concrete (e.g., *wax, water, gets to the size*).

Interpersonal meaning

The interpersonal meaning concerns the interpretation and judgment presented in a text. Mood structure is a major grammatical resource that establishes the stance of a text. English has three mood options – declarative, interrogative, and imperative. In addition to mood, there are word choices that differentiate the two texts along the interpersonal dimensions. For example, modality and other appraisal resources can enable language users to talk about possibility, certainty, usuality, normality, seriousness, necessity, and obligation.

In addition, the nouns in Text (1) tend to be long and complex, (e.g., *a chemical that transmits the impulse interpreted by the brain as "Pain!" endorphins, the body's natural painkiller*), whereas simpler nouns and pronouns are frequently used in Text (2). Long noun phrases construe density. Through this, knowledge is displayed in a dense and complex way in academic text like Text (1).

Textual meaning

The textual meaning has to do with the way a text is organized as a coherent message including clause-combining strategies, thematic progression (the way that information is organized through sentences that scaffolds the organizational structure), as well as nominalization. In Text (1), an embedded clause (*that transmits the impulse interpreted by the brain as "Pain!"*) is used. The use of embedded clause results in complex nominal phrases and dense sentence structures.

Another difference between these two texts is the way in which logical relationship is realized and conjunctions are used. In Text (2), Mindy relies on

conjunctions to make the point, such as linking to previous discourse (*and*) and introducing a condition (*until*). The text structure is marked by conjunctions as discourse markers. However, in Text (1), there are no causal conjunctions such as "*because*". Instead the logical connections are realized through nominal and verbal expressions such as *causes, triggers*, and *the stimulus*. The sentence such as "*Capsaicin causes a complex series of events to occur*" replaces lengthier sentence and looser structure such as "*a complex series of events occur because of capsaicin.*" The conjunctive relationship is integrated into clauses. More integrated logical relationships also contribute to a dense presentation of information in academic text.

To summarize, from the perspectives of experiential, interpersonal, and textual meaning, we can see that context of school is realized through a range of lexical and grammatical choices, which makes academic language different from everyday language.

Grammatical Features of Academic Language

In the theoretical framework of SFL, analyses have been conducted to examine register features that are pervasive and characteristic in students' school reading and writing (e.g., Bailey & Butler, 2003; Schleppegrell, 2001). According to this body of research, the function of academic language is expository because academic texts focus on presenting ideas to be analyzed and interpreted (Schleppegrell, 2004). Academic language is complex, dense, and abstract, which is different from informal interactional language (e.g., Fang & Schleppegrell, 2008; Schleppegrell, 2001, 2004; Schleppegrell & Colombi, 2002). Grammatical choices are employed to construe these functions (Schleppegrell, 2004). Linguistic features of academic language include academic vocabulary, embedded clause, expanded noun phrases, nominalization, and

a high lexical density. These discussions serve as the foundation for our discussion and provide a list of language features that is the most significant, prevalent, and also more universal to academic language.

Academic vocabulary

To communicate in academic discourse, it is important to know a large number of academic vocabulary words. Vocabulary, as the most salient lexical resources across registers, constitutes a significant part in teaching ELL and struggling readers (Carlo, et al., 2004). In academic language, abstract and generic vocabulary is one of the major devices that construe technicality and abstractness in academic texts (Fang, Schleppegrell, & Cox, 2006). Secondary students must be able to use different types of academic vocabulary words including technical vocabulary words that are specific to academic disciplines, non-technical academic vocabulary words that are used across content areas, and multisyllabic words (e.g., Coxhead, 2000; Scarcella, 2003; Zwiers, 2008).

One way to conceptualize academic vocabulary is in terms of tiers or categories. A commonly accepted classification system frames academic vocabulary according to three tiers (Beck, et al., 2002; Calderón, August, Slavin, Duran, Madden, & Cheung, 2005). The first tier is non-academic, conversational vocabulary such as *flower* or *help*; the second consists of general academic words such as *however* and *influence*; and the top tier is composed of content-specific, technical vocabulary such as *organism* or s*upplement*. This three-tier approach has been widely used. Among different tiers, researchers suggest that Tier 2 words, general vocabulary are the most important to teach (Calderón et al., 2005; Snow, 2008).

Expanded noun phrase

Other than academic vocabulary, long and complex nouns phrases are frequently used in academic writing. Structurally, nouns can be simple or complex. Simple nouns are nouns without modification, including pronouns (e.g., *we, it*) and proper nouns (e.g., *Florida*). Expanded noun phrases have more than one modifier (e.g., *a pleasant sensation of well-being*). In this example *a pleasant* is the pre-modifier and *of well-being* is the post-modifier. Nouns can take on a range of functional roles including creating taxonomies, expanding information, condensing previously mentioned message, and building argument (Fang et al., 2006). As a powerful resource that contributes to the density of academic language, expanded noun phrases pack loads of information in fewer clauses with multiple pre- and post modifications that include adjectives, other nouns, adverb, -ed/-ing participles, prepositional phrases, and embedded clauses. For example, Text (1) uses embedded clauses (e.g. *a chemical* ***that transmits the impulse interpreted by the brain as "Pain!"***) to pack a lot of information into the nominal structure, whereas the lexical terms in Text (2) are mostly simple nouns (e.g., *wax, water, size*).

The ability to use expanded noun phrases in academic writing indicate to a great extent students' reading and writing abilities in academic register. Students who are proficient in academic language use more expanded noun phrases (e.g., Hunt, 1965; Fang, 2008b). For example, Fang's (2008b) analyzes the use of nouns in third-, fifth-, seventh-, and ninth-grade students' scientific writing samples. By calculating the percentage of every type of nouns including simple nouns and complex nouns in the low quality and high quality texts in these four grade levels, Fang (2008b) suggests that regardless of grade level, high quality texts use more complex nouns than low quality

texts and that more complex nouns are used in texts of higher grade levels than those in texts of lower grade levels. The use of expanded noun phrases is believed to be one of the strong indexes of academic language.

Nominalization

Nominalization is a type of grammatical metaphor. When developing academic writing, the increasing use of abstractions, generalizations, impersonality, and lexical density derives from the use of grammatical metaphors (Martin, 1997). Developing academic language means having a good control of grammatical choices to realize abstractness and technicality in academic writing. One of these choices is grammatical metaphor, a pervasive academic language feature that expresses meanings in incongruent grammatical forms (Halliday, 1985). By using grammatical metaphor, an expression that could be construed more naturally in daily interactional language is realized in a more abstract and technical way. Halliday (1985) sees grammatical metaphor as a complex and significant step in a student's language development.

According to Halliday and Matthiessen (2004), grammatical metaphor is conceived as an incongruent realization of a given semantic configuration in the lexicogrammar. There are various types of grammatical metaphors. Grammatical metaphor includes interpersonal metaphor using a mental process of cognition, such as "using first person present tense mental processes of cognition (*I suppose*) instead of modal verbs to realize low probability" (Martin, 1997, p. 28). Grammatical metaphor can also be interpersonal metaphor that uses question to represent an imperative statement. For example, when we say "*would you please open the door,"* we actually mean "*open the door."* Grammatical metaphor can also be experiential. For example, construing

causality not as conjunctions (*because, so*) but as nouns (*reason*), verbs (*trigger*) or prepositions (*with*) is an example of grammatical metaphor.

As an essential type of experiential grammatical metaphor, nominalization is the process by which verbs, adjectives, or what would more naturally be presented in another form in interactional language become noun phrases (Eggins, 2004; Schleppgegrell, 2004). According to Eggins (2004), it is “situations where meanings typically (congruently) realized by one type of language pattern get realized by less typical (incongruent) linguistic choices” (p. 99). Nominalization particularly serves to recast everyday language in a more specialized way and contributes to technicality, reasoning, and abstractness that characterize academic language.

Nominalization contributes to the density in a text by allowing information that otherwise would be a whole clause to be packed into a noun phrase (Martin, 1997). By changing a congruent (verbal or clausal meaning) into an incongruent expression (nominal element), nominalization can enable something that has been presented as a clause to be distilled into a noun phrase. Nominalization is usually related to linguistic features such as complex noun phrases with pre- and post- modifiers as well.

One of the cognitive functions of nominalization is reasoning (Schleppegrell, Achugar, & Oteiza, 2004). Nominalization helps the reasoning to be developed in academic writing. In academic writing, nominalization usually distills the information previously mentioned into a noun phrase. This noun phrase can then participate in a chain of reasoning. In historical writing, nominalization may be used to represent a category of reasons that explain a historical fact, which can significantly increase the academic-ness in the reasoning.

Nominalization also construes technical knowledge and contributes to the technicality in the text (Schleppegrell, 2004). Another main cognitive function of nominalizations is categorizing, through which nominalization constitute the basic principle of forming technical terminology. Nominalization also makes it possible to construe hierarchies of technical terms. Through nominalization, a step-by-step argument can be developed using complex passages packed in nominal form as themes. This also contributes to the technicality of a text.

In written language, nominalization is one of the most important indicators of a more formal and abstract writing style (Connor, 1995). It is also regarded as the most important feature of students' development from an oral language style to academic writing (Colombi, 2002). Nominalization plays an important role in academic writing development. As students move through the grade levels, they are expected to use nominalizations in their writing to demonstrate that they understand the more abstract concepts in these subjects and also express the concepts in a formal way.

Embedded clause

In secondary school content areas, academic texts usually present information in a hierarchical structure (Schleppegrell, 2004). This is construed through textual resources such as the clause-combining strategies, which is how clauses are combined with different types of clauses such as embedded clauses and nominal structures.

Clause-combining strategies are central to register differences (Colombi, 2002). Clause is the primary constituent of text in writing research from a grammatical perspective. It is defined as grammatical structures with finite verbs (finite verb is a verb that shows agreement with subject and is marked for tense) and can be categorized as

main, paratactic, hypotactic, and embedded clauses (Colombi, 2002). A more detailed definition and examples from text (1) and (2) can be found in Table 2-3:

Clause combining strategies play an important role in information structure and thus are characteristic of different registers (Colombi, 2002). In informal spoken language, we tend to make a sequence of clauses that are hypotactic or paratactic, whereas in academic register more embedded clauses are used to pack more information in less independent clauses. Therefore, relatively high percentage of embedded clauses in writing text is regarded as a marker of academic language.

Clause combining strategies can also be highly related to writing qualities (Schleppegrell & Colombi, 1997). A well-planned and tightly constructed essay tends to have embedded clauses that are linked in logical ways. To the contrary, a more emergent organizational structure needs more extension and elaboration of ideas, which results in more uses of paratactic and hypotactic clauses. Studies have shown that as students develop their academic language, their writing moves from more oral to more written styles that are characterized by reduced clausal structures (e.g., Colombi, 2002; Crowhust, 1990; Menyuk, 1988) and less parataxis and hypotaxis (Halliday & Matthiessen, 2004). Clause combining strategies have been used as one of the most important indicators by researchers when exploring students' academic language development trend (e.g., Colombi, 2002). Colombi (2002) examine two bilingual students' Spanish academic writing and use clause combining strategies, grammatical intricacy, nominal structure, and lexical density as measurement to determine students' growth in academic writing. The results suggest that students move from informal register that draws on hypotactic and paratactic clauses to more formal register that

draws on main clauses and embedded clauses. Because of the important functions that different clauses can realize, the use of embedded clause must be considered in this study.

Lexical density

Lexical density is a measure of the number of lexical items or content words per non-embedded clause in a text. Lexical items are the content words including nouns, adjectives, verbs, and some adverbs (Halliday, 1985). To the contrary, the grammatical items include articles such as *the* and *a*, propositions such as *in* and *on*, pronouns such as *him*, auxiliary verbs such as ***had*** *conducted*, conjunctions *and*, and demonstratives *this*. In conversation, we use fewer lexical items and more grammatical items. But in academic writing, more lexical items must be included because we need to express the meaning through the language itself without relying on contextual or extralinguistic clues such as intonations (Christie & Derewianka, 2008).

Lexical density reveals how tightly the lexical items have been packed in a text and how difficult a text is to read. It can be a summary measure of academic language as all three metafunctional meanings (experiential, interpersonal, and textual) work together simultaneously and result in different lexical densities of various registers. Eggins (2004) points out that lexical density is a linguistic feature that is the most sensitive to mode variation because it signals the most striking difference between spoken and written language.

Whereas spoken language usually has low lexical density and more complex structure with frequent conjunctive links, academic texts usually have more content words and embedded clauses and therefore are more densely structured. In order to create a flow of information and facilitate reasoning and argument, academic texts

frequently use expanded noun phrases, nominalization, and other grammatical metaphors that all contribute to packing more information. This may result in academic language's high lexical density. As Halliday and Matthiessen (2004) suggest, two content words per clause is typical for informal spoken language, whereas this density is around four to six in written language and even higher in scientific English. In text (1), there are 39 content words and seven non-embedded clauses, and thus the lexical density is 5.57. In text (2), the lexical density is 15/7=2.14, which is much lower than the first one.

To summarize, a number of language resources realize academic register and build a conceptual model of academic language. Register, as the situational context in which a text is produced (Eggins, 2004), determines the social functions and language patterns that realize these social functions. Academic register thus decides and also relies on the grammatical and lexical features that we just discussed to realize different meanings. Table 2-4 is adapted from Schleppegrell's (2004) *Form of Register Features of the Language of Schooling* (p. 74). This form lists three types of situational expectations of academic language that correspond to the variables of field, tenor, and mode of the academic context. It also gives us a comprehensive picture of these grammatical and lexical features in three meanings (experiential, interpersonal, and textual) of academic language. Please refer to Table 2-4 for these grammatical and lexical features.

Proficient mastery of these register features is significant for developing academic language and learning knowledge in secondary content areas. Building upon this, SFL provides strategies for evaluating the quality of students' writing (Fang &

Schleppegrell, 2008; Schleppegrell, 1998) and support secondary teachers to develop students' reading and writing abilities. When analyzing students' writing, SFL is concerned about students' effectiveness in using linguistic features to construe the academic-ness in historical writing. SFL also looks beyond the grammatical errors and focuses on students' strength. Students' writing development is considered as a continuum of competency between an interactional, colloquial style and an advanced use of register features in academic writing.

To learn the register features of academic language, the best pathway to learn language is through social experience or apprenticeship (Gee, 1996; Schleppegrell, 2004). It is significant for students to be provided with meaningful experience and context in order to learn these linguistic features and develop academic language. It is also essential to provide tools for both teacher and students to analyze academic texts and examine whether students are developing academic language features to meet the linguistic expectation of academic register. Furthermore, we may discuss whether or not the classroom context and social practice are really helping students develop their academic language to facilitate content area learning. In this way, more likely the expectations of schooling can be reconsidered and the pedagogical approaches regarding reading and wring instruction can be informed (Schleppgegrell, 2004).

Academic language: different content areas and different genres

Academic language is dynamic and varies with respect to factors such as purposes, topics, and situations. Different disciplines have different purposes and thus require the use of different genres to accomplish those purposes. Language choices also vary across genres (Fang & Schleppeggrell, 2008). This dynamic nature of academic language presents a challenge to students: learning to understand and use

these features to build different types of texts in different school subjects. For example, language in history and language in science have different purposes. In science, students are frequently required to write scientific report that describe the steps of experiment and discuss the application of results. In history, students usually write about historical events and analyze the cause and effect within events. Different language resources must be deployed to realize distinct purposes, topics, and situations.

When we discuss the language of discipline, it is important to know the concept of genre that reflects different purposes of language and variations within each discipline. The notion of genre describes particular types of texts that serve specific social purposes and characterize particular social contexts (Schleppegrell, 2004). According to Eggins (2004), genre is the context of culture, which is "the general framework that gives purpose to interactions of particular types, adaptable to the many specific contexts of situations that they get used in" (p. 63). Each genre can be identified by its communicative purpose and linguistic features. Genre reflects speakers' cultural expectations about what goes first, next and last. On the basis of various purposes that different genres intend to achieve, texts of different genres can be realized through different lexical-grammatical choices. Defining the features of a genre can never be exclusive or definitive, but it is useful and important to know that a range of lexical and grammatical features characterizes various genres.

Seven prototypical school-based genres proposed by Martin (1989) are: recount, narrative, procedure, report, account, explanation, and exposition, all serving different purposes and having different linguistic features (see Table 2-5). Martin (1989) put seven prototypical school-based genres: recount, narrative, procedure, report, account,

explanation, and exposition into three categories based on the purposes they serve: personal (to present personal experience, including recount, narrative), factual (to present factual information, including procedure, report, account), and analytical (to analyze and argue, including explanation and exposition). Within each category, as a genre advances, grammatical demands increase. For example, in analytical genres, exposition demands more academic register features than explanation does. Among three categories, students usually have much more experience in personal genres since most of the time in elementary years students read and write recounts and narratives. When students advance into secondary schools, they have more frequent encounters with factual and analytical genres. For these students, the lack of familiarity with factual and analytical genres usually results in big challenges in content area learning.

Report and arguments are the most advanced and demanding genres in the category of factual and analytical genres. Students encounter them almost everyday in secondary content area classrooms. Students need to have good mastery of academic language to read and write successfully in these genres. Expository text is particularly important as the gate-keeping milestone when students move from elementary to secondary levels.

Report is to classify and describe by relating a set of facts. The register features include timeless verb, generic participants that are realized by technical noun phrases, and expanded noun phrases with embedded clauses and preposition phrases. Clause Themes usually focus on the abstract concept classified or described. Besides, report is usually written in a relative formal and objective way.

Argument, or exposition, proposes thesis, presents different views, and supports the thesis with evidences. This genre relies more on expanded noun phrases and abstract nouns to create abstract participants and present complex argument. To create a flow of argument in a dense and hierarchical organizational structure, exposition draws on language resources such as nominalization and embedding. To express attitudinal meaning, logical connectors and modal verbs need to be effectively used. Declarative mood and third person are used to realize impersonality. Nominalization changes actions into things, which makes the argument sound more objective and also contributes to the hierarchical structure.

Academic register varies to different social context and different social purposes, topics, and situations it serves. Variability of academic language thus presents challenges to students: learning to understand these features and use them to create different types of texts in different school subjects. To gain control over academic registers, secondary students are expected to learn these genres of schooling in order to read and write in various content areas. In addition, to function successfully in any content area in secondary school setting, students must be familiar with genres that are prevalent in this area. More importantly, students should be familiar with the grammatical and lexical resources available so that they can construct texts that meet the expectations of the disciplines.

Developing Academic Language Across and Within Content Areas

Overview of the Academic Language Instruction

This section reviews research regarding academic language demands across content areas, academic language instructional practices, and teachers' preparation and training in teaching academic language. A broad collection of materials with regard

to these areas was retrieved from professional journals, practitioner handbooks, and some online resources. The literature included has a clearly defined purpose, matches my goal of discussing academic language in the framework of SFL, and explores the pedagogic strategies to develop academic language in secondary students. Some studies included in this review may not employ a SFL theoretical framework. They were included because they emphasize the importance of lexical and grammatical features and their connection to academic functions. Although attempts were made to include mostly empirical studies, some noteworthy position papers were also included for this discussion. The body of recent research reviewed here has identified a number of features of academic language that can be made explicit to students, and has demonstrated that students can learn to meet the linguistic expectations of academic contexts when being provided with appropriate instruction.

Academic Language Features of Content Areas

This subsection includes a discussion of literature regarding the academic language demands of different content areas, followed by instructional practices supporting the development of academic language.

Different disciplines engage in different social practices. These differences are manifested in the ways language is used by disciplinary experts (Fang & Schleppegrell, 2008). Research suggests that different disciplines create, disseminate, and evaluate knowledge in diverse ways, and correspondingly, have their particular use of language (e.g., Fang & Schleppegrell, 2008; Schleppegrell, 2004). Various characteristics of academic language in different content areas pose great challenges to secondary students (e.g., Coelho, 1982; Short, 1994).

In K-12 settings, the content areas in focus are language arts, science, math, and social studies. A number of attempts have been made to operationalize academic language for teaching, learning or test development purposes by discussing the language features in various reading materials such as textbook across core content areas (e.g. Bailey et al., 2007; Bruna, et al., 2007; Butler et al., 2004a; 2004b; Kidd, 1996). Some studies in this field focuses on a specific content area, such science and math. These studies present and analyze the kinds of language students need for successful school performance in various content areas. Their findings contribute to the conceptualization of academic language and also provide concrete guidelines for teaching, learning, and assessment purposes.

Science is one of the most challenging subject areas for secondary students. Language in this content area builds up specialized and abstract knowledge and involves translating or constructing common sense meaning into technical terms (Unsworth, 1999). Therefore, the science language is regarded as the best representation of academic language and receives the most attention from researchers (e.g., Gee, 2004a). In science, a variety of grammatical and lexical resources are used to formulate hypotheses, propose alternative solutions, describe, classify, use time and special relations, infer, interpret data, predict, generalize, and communicate findings (Chamot & O'Malley, 1986). The grammatical and lexical resources such as complex subjects, nominalizations, passive main verbs, and complex embedding make science texts difficult to read for secondary students (Gee, 2008). When reading in science, students are challenged with a great deal of technical terms and non-technical terms that have unique meanings in a scientific context. These terms are chained with pre-

(adjective that modify the noun) and post-modifiers (adjectives and embedded clauses that modify the noun). Students must also comprehend expanded noun phrase and nominalization to interpret a flow of information and scientific reasoning.

The discipline of history presents a very different discourse from science. History usually describes events in chronological order and explores cause-effect relationship through classifying and interpreting these events (Coffin, 2006a, 2006b; Schleppegrell, 2005). Historical texts can construct explanation and present points of view and present historical debates. Historical understanding involves building connections and interpretations as well as perspectives among historical event, people, and movements. Oftentimes, the attitudes of the authors are implied underneath the descriptions and explanations of historical events and actors. In many situations, the readers must interpret the attitude of author. This interpretation positions readers in viewing history from some specific perspectives. Meanwhile, students are also expected to step back from their own interpretation and seek for a deeper understanding of issues (de Oliveira, 2011). When writing in the subject of history, students need to use academic language to achieve functions such as explaining, describing, defining, justifying, giving examples, sequencing, comparing, and evaluating (Short, 1994). Students are expected to demonstrate their knowledge through presentation of historical events in authoritative and structured ways (Schleppegrell, 2004). Students must be able to understand and display the cause-effect relationship among events for explanation and interpretation.

Historical texts also utilize a number of language patterns and linguistic features to construct historical meaning. For instance, a variety of syntax types, including simple past, historical present, sequence words, active voice, temporal signals, and causative

signals are dominant in history texts and construct the time sequence and cause-effect relationship (Short, 1994). Moreover, the pattern of information flow is usually construed by nominalization. Sequences and events are nominalized into noun groups so that more extended description, classification, and qualification can be unwrapped in the text. Furthermore, multiple embedded clauses, complex past tense forms, and extensive use of pronouns within an expository text structure are also important features (Chamot & O'Malley, 1994). As Schleppregrell (2009) concludes, noun groups that construe historical actors, verbs that indicate different types of processes, and prepositional phrases that refer to grammatical circumstances, are the fundamental features of historical texts. The discourse of history will be elaborated further in the upcoming section.

As for the discipline of mathematics, mathematics texts draw upon three semiotic systems to make meaning: language, mathematics symbolism, and visual display (O'Halloran, 2005). Accurate reading and writing in mathematics is necessary because language plays an integral role as students engage in problem solving, participate in discourse practices around mathematical topics, and construct meaning during their lessons (e.g, Adams, 2003; Spanos, Rhodes, Dale, & Crandall, 1988). The demands of mathematical language in secondary classrooms can be described at semantic and syntactic levels (Spanos et al., 1988). Examples of semantic features include technical vocabulary (e.g., *coefficient*), ordinary vocabulary that has different meanings in math (e.g., *square*), complex strings of words (e.g., *least common denominator*), and synonymous words and phrases (e.g., *add, plus, and combine*). In terms of syntactic features, comparatives structures (e.g., *greater than/less than*), logical connectors (e.g.,

if . . . then, given that), reliance on the passive voice, and various uses of prepositions characterize mathematics language (Spanos et al., 1988). Schleppegrell (2007) provides a summary of key linguistic features in the mathematics register. These features of the classroom mathematics register include technical vocabulary, dense noun phrases, 'being' and 'having' verbs, conjunctions with technical meaning, and implicit logical relationships. Schleppegrell (2007) also suggests that teachers must support students and teach these features explicitly so that they can move from interactional register to mathematic register.

Finally, in literary texts, students read various kinds of genres and the patterns they are expected to read vary as well. The literature particularly addresses aesthetic needs and language in literatures such as poetry, drama, and fiction is usually creative and artistic (Lukin, 2008). Although the language features are very diverse, cohesion, language conventions, rhetorical devices, and choices of words are usually emphasized in getting the meaning from literary texts.

To summarize, academic language exhibits different features across various content areas and thus poses diverse language demands on secondary students (Fang & Schleppegrell, 2008). The literature reviewed with respect to different academic language demands in different disciplines shows both subtle and distinct differences across content areas. The literature emphasizes the needs for instructional practices that address both syntactic and semantic features specific to the discipline, teach discipline-specific knowledge of language, and facilitate teachers' classroom instruction to develop academic language.

Writing in Academic Language

In the previous section, the literature studies published materials such as textbooks and other reading materials. In terms of academic writing, the great majority of studies focus on the early years rather than the late childhood and adolescence (Christie & Derewianka, 2008). Few studies adopt a SFL framework to study the nature and development of academic language in students' writing. Several functional linguistic studies examine relative large samples of students' successful academic writing and explore the development of academic language and how adolescents employ grammatical choices to realize meaning in different contexts (Christie & Derewianka, 2008; Perera, 1990). According to this body of research, adolescent writers use features such as more embedded and dependent clauses, longer sentences, an extended vocabulary, greater use of modals, and more uses of passive voice in their academic writing.

In a large-scale empirical study of Myhill (2008), the linguistic characteristics of writing in 13- and 15-year-olds are one of the most important findings in adolescent writing. Myhill (2008) conducts detailed grammatical and discourse analysis of personal narratives and arguments. Her analysis suggests that the texts written by adolescents have greater use of subordination and nonfinite clauses and shows more awareness to the audience. Christie and Derewianka (2008) take into consideration various content areas such as history and science and perform functional linguistic analysis on texts written by students of different ages. These texts are chosen by their teachers as the benchmarks of what are possible at each phase of writing development. In their book, one chapter is devoted to explore the linguistic resources required to provide explanations and develop arguments in the later years of schooling. According to the

linguistic analysis, adolescent students use a variety of linguistic resources for reasoning about causes, influences, outcomes, and consequences. Their texts are better organized and have a higher value of lexical density than young writers. General participants and specialized history vocabulary are more dominant in the writing. These studies of developmental trajectories of academic writing focus mostly on benchmark essays and successful academic writing of adolescents and most of them take place in the Australian context. Nevertheless, they will serve as the background knowledge of my study so that we can contextualize adolescents' historical writing in the overall trajectory of academic writing development.

More functional linguistic studies examine one to several writing samples by adolescents to understand students' ability of utilizing academic language features in their writing (e.g., Colombi, 2002; Schleppegrell & Colombi, 1997). Studies of this kind focus mostly on bilingual writers. They analyze discourse-organizational patterns, clause-combining strategies, grammatical metaphor, and a variety of academic language features and how successfully these features realize meanings in content area learning. Some of these studies analyze students' uses of academic language features to examine the impact of academic language instruction (e.g.Huang, 2004; Spycher, 2007). Most of these studies do not examine the relationship between academic language use and reading ability and writing quality.

One interesting study of McNamara, Crossley, and McCarthy (2010) explores how sophisticate uses of academic language features can predict writing quality. Specifically the study examines linguistic differences related to cohesion and linguistic sophistication between high- and low-proficiency writers, as indicated by their score on

an argumentative essay. The participants are undergraduate students and 120 essays are collected in this study. The authors examine features such as lexical diversity, word frequency, and syntactic complexity. According to the findings, these three features are also the three most predictive features of essay quality. The authors state that more-skilled writers have greater working memory capacity to access and use less familiar words as well as more complex syntax in their writing. On the other hand, the cohesion is not predictive of essay quality. The authors explain that, in this specific context, the raters do not seem need cohesion cues to understand students' expression. Overall the results of this study indicate that more-skilled writers use more sophisticated language. However, some of the textual features of good student writing (e.g. cohesion) may not be the same as those features that are considered to be facilitative for reading. This study raises more research interest toward the connection between use of academic language features and reading ability a well as writing quality.

Studies of academic writing focus on the features secondary students must know to construct content area meaning at different phases. These studies offer a context for us to understand academic writing development. It is interesting and meaningful to know the connection between adolescents' actual abilities of using academic language features and the connection between these uses and reading/writing abilities.

Instructional Practices to Develop Academic Language

As defined earlier, in secondary school setting, developing academic language is a process of developing essential "multiple, dynamic, inner-related competencies" and building knowledge of linguistic, psychological, social, and cultural components with the goal to accomplish a variety of academic tasks in school context (Scarcella, 2003, p.3). Different instructional practices are based on different conceptualizations of academic

language. Many emphasize the importance of lexical component (i.e., academic vocabulary) and others pay more attention to grammatical component (i.e., grammatical features) interwoven with higher-order thinking skills and language functions (Scarcella, 2003). Most of the researchers view academic language as a type of challenging language specifically for ELLs, and they propose instructional practices to address ELLs' needs (e.g.,Scarcella, 2003; Zwier, 2006). Below I will present some of these instructional practices.

Academic vocabulary

Academic vocabulary includes general academic vocabulary words that are used across different content areas, technical vocabularies that are specific to academic disciplines, non-technical academic vocabulary words that are used across content areas, and multisyllabic words (e.g. Zwiers, 2008; Scarcella, 2003; Coxhead, 2000). Because of its essential role for secondary students, academic vocabulary has traditionally been the focus of instructional practices to develop academic language.

The literature on academic vocabulary instruction has several common emphases, including ways of identifying and classifying essential words (e.g., Cox, 2003), principles of effective academic vocabulary instruction (e.g., Adams, 2003), and explicit word study and practice across contexts (e.g., Calderón, 2007). For example, Calderón (2007) describes results of a six-month academic vocabulary intervention for 300 bilingual (English-Spanish) third-graders across eight elementary schools in El Paso, Texas. Everyday students receive 90 minutes of reading instruction. In this instruction, 30 minutes are devoted to academic vocabulary: pronunciation, meanings, and English-Spanish cognates. The vocabulary taught is from school texts, and also classified based on a process adapted from the three-tier model mentioned before.

According to Calderón (2007), the intervention has a positive effect on academic vocabulary.

Missing from the academic vocabulary literature are findings that demonstrate how secondary students cope with academic vocabulary in content areas and how effective academic vocabulary instruction is implemented and sustained in school settings. Moreover, a tendency in the literature is that academic vocabulary is equated with academic language. Despite of the significance of academic vocabulary, a mere focus on academic vocabulary is problematic, as vocabulary acquisition cannot provide enough support for academic language development. This shed light on the importance of linguistic features and discourse structures in learning academic disciplines (Bruna et al, 2007; Schleppegrell, 2001, 2004). Bruna et al. (2007) present a cautionary example regarding the consequence of academic language instruction that is driven by a simplistic approach and focuses on vocabulary. Their exploratory study examines explicit academic language instruction in science classrooms and how a teacher's knowledge of academic language affects her instruction and students' opportunities for learning. The teacher is interviewed about the linguistic elements of her science lessons. Her ninth-grade all-ELL science classroom instruction is observed over a four month period. Results reveal that this teacher's conceptualizations of academic language revolve mainly around academic vocabulary. In this classroom, academic language instruction is more like a vocabulary-based instruction that ignores important linguistic features, such as the unique grammatical and discursive patterns embedded in the genres of science. The author argues that, contrary to the goals of developing academic

language, this type of academic language instruction impedes students' opportunities to talk and think like scientists.

In this study, academic language teaching could not lead to students' real progress in academic language development because the classroom teachers' conceptualization of academic language only focuses on academic vocabulary. Students could not get sufficient support in other components of academic language development. Therefore, whereas academic vocabulary is necessary for learning in any content area, academic language development is dependent on the development of all components, especially lexical and grammatical features and higher-order thinking skills (e.g., Chamot & O'Malley, 1994; Kidd, 1996; Valdés, 2006).

Other linguistic features

Linguistic features, beyond academic vocabulary, pose enormous challenge to secondary students. As we discussed before, a high degree of academic-ness is realized through elaboration of noun phrases (Coffin, 2005), conjunctions (Spycher, 2007), different types of noun phrases (Fang, 2008a), and clause-structuring strategies including nominalization and embedding (Colombi, 2002; Schleppregrell, 2001). These grammatical features realize higher-order thinking skills and language functions in academic registers (Zwiers, 2007). In this section, I will review a body of research literature that advocates explicit teaching of linguistic features in a meaningful learning environment (e.g., Bailey et al., 2007; Warschauer, Grant, Real, & Rousseau, 2004).

Explicit teaching of linguistic features is supported by studies regarding the cultural codes that must be mastered for full participation in a Discourse or a culture (Delpit, 1998). Cultural codes are Language patterns and linguistic features that many students will never get without being explicitly taught (Delpit, 1998). Students must be

acculturated and apprenticed into academic Discourse and academic ways of communicating (Bartolomé, 1998; Gee, 1996). When students have little capital in and familiarity with the valued ways of using language, explicit and direct teaching of language demands is strongly recommended (Bartolomé, 1998). As Bartolomé (1998) points out, direct teaching "linguistic messages explicitly and precisely" is particularly needed for many students who lack experience of sharing knowledge with distant audience and do not see the need of producing clear and explicit academic texts (p.66).

Differences between literacy requirements in primary and secondary levels are another reason that academic language features must be taught explicitly. Strong early reading skills do not automatically develop into more complex skills that enable students to process specialized and sophisticated reading of literature, science, history, and mathematics (Shanahan & Shanahan, 2008). Narrative is the dominant focus in American elementary school settings. Many students are unfamiliar with the expository nature of academic language they encounter in secondary-school content area learning. This unfamiliarity, demonstrated by functional linguistic analyses of student writing, means that students in secondary schools and even colleges often lack understanding of expected language use in performing given academic tasks (Schleppegrell, 1996; Schleppegrell, 2003). Therefore, instructional practices must explicitly teach students academic language features such as sophisticated genres, specialized language conventions, disciplinary norms of precision and accuracy, and higher-level interpretive processes (Schleppegrell, 2001).

Literature supports the positive impact of explicit teaching of language features on academic language development (e.g., Aguirre-Muñoz el al, 2006a, 2006b;

Echevarria, Short, & Powers, 2006; Hammond, 2006; Huang, 2004; Schleppegrell & de Oliveira, 2006; Spycher, 2007). These studies usually target features of academic language in a specific content area such as history and science. They report how the explicit instruction of these features influences students' (mostly ELLs') language and literacy development. For example, Spycher (2007) studies how one secondary ELL handles the challenges in academic writing tasks. The participant is a student who is learning the language and literacy skills in an English Development Class (ELD). This study uses sentence analysis organizer to examine the effects of instructional strategies that teach linguistic features explicitly. The student's two drafts of one topic are analyzed in terms of three linguistic features: authoritative stance, conjunction, and references. Results suggest that student's first draft is written in an everyday style and does not meet the expectations of academic register. However, in the second draft, the student produces text that increasingly incorporates the linguistic features of academic language. This progress suggests that explicit instruction on the expectations of academic writing promotes students' academic language development.

Another study focuses on specific science content and the construction of academic writing in school science (Huang, 2004). The instructor teaches academic features of scientific language from the perspective of SFL in five weeks. Over these five weeks, the students write multiple drafts on several topics, and the author collects field notes, lesson plans, students' writing on classification of matter, and discourse data from teacher-student interaction. Results suggest the improvement of subsequent drafts particularly in the use of reference and nominalization and the number of terms explained and exemplified. The author concludes that explicit instruction in particular

grammatical resources used in science writing plays an important role in this development.

In these studies, we can see that a number of factors including content and language instruction are usually interwoven with each other. It is hard to disentangle the impact of explicit instruction as an independent variable from all other variables. As an exception, Echevarria et al. (2006) include a control group in their study of academic writing. In this study, the authors report the positive effect of the Sheltered Instruction Observational Protocol (SIOP) on middle school ELLs' expository writing. SIOP is a sheltered approach to language instruction that combines both content area learning strategies and ELL teaching strategies on ELL's academic language development. The study uses a quasi-experimental design. One major difference between the control and experimental group is that students in the experimental group receive explicit teaching of language objectives and linguistic features whereas students in control group receives nothing in this regard. In this model, at the beginning of each lesson, the specific language objectives would be taught explicitly. The instructors teach about content-specific vocabulary and text structures. The researchers collect and assess the pre- and post-test writing samples using the writing assessment from the Illinois Measurement of Annual Growth in English. Results reveal that the group taught using the SIOP model shows significantly better gains in writing than does the comparison group. Based on the findings, authors suggest that a consistent and systematic implementation of the features in instruction found in the SIOP model is effective in improving ELL's expository writing. This study offers more persuasive results with respect to the positive impact of explicit instruction of academic language features.

Explicit functional grammar instruction has been criticized by a number of researchers (e.g., Bunch, 2006; Gutiérrez, 199). For example, Bunch (2006) claims that, given the wide range of ways in which language is used in academic settings, what can be taught explicitly in classrooms is quite limited. Moreover, teachers' explicit attention to and particular emphasis on form might lead to an artificial learning environment and students' misunderstanding that form is the substance of instruction itself. Moreover, Bunch (2006) emphasizes that learning academic language is gaining a membership in academic discourse communities. Explicit focus on language is helpful, but not enough. Students need to use and participate in "a community of discourse" rather than only learn through "an abstract study of language" (Gutiérrez, 1995, p. 34).

This type of critique results from the misinterpretation of academic language features and how to teach them explicitly. Explicitly teaching of academic language is not teaching decontextualized and static grammar. Neither is the focus on form and linguistic features in isolation (Schleppegrell, 2004). In explicit instruction, students are engaged into analyzing language features and understanding the functions of these features in disciplinary meaning making. Therefore, this is not an abstract study of language. Rather, this is "recognition of the socio-cultural and discursive bases of knowledge and learning" (Coffin, 2006b, p. 424). Learning linguistic features is part of the process of obtaining cultural codes to enter the community of academic Discourse (Delpit, 1998).

Overall, the positive impact of explicit teaching of academic language has been suggested in the literature (e.g., Gibbons, 2003; Scarcella, 2003). In reality, the language features, the demands, the expectation posed by academic texts and school

discourse is usually implicit to students (de Oliveira, 2011). This is a particularly unfair reality for language and cultural minority students. Therefore, it is crucial to raise students' awareness of important components of academic language including lexical and grammatical features and their functions. Students must know that academic language uses these components differently compared to everyday language. Students should understand the expectation of different disciplines and be engaged in actively analyzing language features of these disciplines. Students must understand how resources of linguist functions can be employed to construct meaning in disciplinary communities. All of this must be achieved through explicit academic language instruction.

Training Teachers to Teach Academic Language Features

Effective classroom instruction, as the most important factor in developing adolescents' academic language, is contingent on the quality of teachers (Campbell & Kmiecik, 2004; Shanahan & Shanahan, 2008). The studies mentioned previously mostly focus on the students' side. Here I will review another body of literature that pays more attention to teachers' knowledge and practice.

Teachers' knowledge and practice of academic language

In terms of academic language, a quality instruction is dependent on, among other things, teachers' knowledge of academic language demands and linguistic features specific to different content areas (Colombi & Schleppegrell, 2002; Schleppegrell, 2001, 2004). Teachers should possess sufficient linguistic knowledge to conduct language development activity in content area discourse to help students in academic reading and writing (Schleppgrell, 2006; Spycher, 2007). In order to help students fully develop academic language and content knowledge, teachers should be

capable of making the linguistic expectations explicit to students and teaching the linguistic elements that are characteristic of and valued by academic registers (Aguirre-Muñoz el al, 2006a; Zwiers, 2007).

Unfortunately, although content area teachers are usually experts in their disciplinary communities, many of them are not aware of the highly demanding nature of academic texts in their respective content area (Scarcella, 2003). Content area teachers are busy teaching their content and thus spend little time engaging students in language development activities beyond learning academic vocabulary words (Bruna et al., 2007). Researchers have noticed that many preservice teachers hold recalcitrant attitude toward teaching academic writing, although they are required to take a content area literacy course as a part of certification (Draper, 2002).

Classroom observation and teacher interviews have been conducted to examine teachers' knowledge and practice regarding academic language development (e.g. Bailey et al., 2007; Bruna et al., 2007; Spycher, 2007). Solomon and Rhodes (1996) provide survey results of 157 ESL teachers' perspective on academic language. Results suggest that the respondents (elementary and secondary ESL teachers) view academic language in terms of discrete aspects of language such as vocabulary or grammar. Some of them focus on functions of language such as comparing and contrasting, categorizing, and sequencing events. This lack of knowledge has not changed qualitatively and is still reflected in teachers' classroom practice (e.g. Bailey et al., 2007; Bruna et al., 2007). The descriptive study by Bailey et al. (2007) examines how teachers use oral language to support students' academic language in fourth- and fifth-grade mainstream science classrooms. The language functions used by teachers and the

academic vocabulary growth of students are observed over several weeks across several different science lessons taught by teachers. Although some evidences of all language functions such as explanation, description, comparison, and assessment can be found in the classrooms, teachers use many academic vocabulary words without any substantial support. These teachers do not make full use of the opportunities to teach about academic vocabulary and language functions.

Zwiers (2007) reports similar findings in his study. He investigates the ways in which mainstream content area teachers teach academic language to non-mainstream students. The author observes three teachers' classes approximately two days per week in four months and focuses on language events of teacher and student with respect to academic language features and functions. The teachers' practice including their explicit teaching of academic language, modeling and scaffolding, and less explicit uses of academic language by teachers and students are all recorded during the observation. A measurement of linguistic features of academic language is conducted to examine the "academic-ness" of students' utterances and both positive and negative factors in teacher' practices are identified. The occurrence frequency of academic language features such as nominalization, passive voice, complex sentences, cohesion, and coherence are calculated to measure the level of "academic language-ness" in particular utterances taken from the classroom texts and student writing samples. The researcher analyzes the logbook and essays of students to track the change in thinking processes and academic expressions. Results reveal that students make evident progress in the language of identifying cause and effect, taking other perspectives, and comparison but not the language of bias and application of history. The authors explain

that, when teachers understand the cognitive skill of their discipline and the language that support these skills, students can be supported in their academic language development. When teachers do not have those skills or do not design activities that focus on those thinking skills and language patterns, the instructional practice will impede students' academic language development.

Studies have also looked into how teachers take the roles of modeling (demonstrate the accurate use of academic language features) and scaffolding (explain and solve the challenges that academic language features pose) to develop academic language and learning content in content areas (Gibbons, 2003; Jacob, Rottern, Berg, Patrick, & Wheeler, 1996). To read and write successfully in content areas, students should think and use language in the ways disciplinary experts do (Schleppgrell, 2006; Zwiers, 2008). Content area teachers, as disciplinary experts, must model the ways of using disciplinary language and teach the specialized ways of thinking and using language via teacher-student interaction.

Gibbons' (2003) study examines factors in classroom discourse that enables (or constrains) language development. The role of teacher-student interaction in academic language development is also explored. This study is based upon the constructs of mediation of sociocultural theory and mode continuum of SFL. The author investigates how teacher-student talk in a content-based (science) ESL classroom contributes to learners' language development. Data sources include audio recordings and transcriptions of 14 hours of discourse; environmental print around the classroom, such as posters, charts, and children's work, field notes, and interviews with teachers and students. Data analysis suggests a number of strategies that teachers may use to build

explicit linguistic bridges between two discourses (academic Discourse and everyday interactional Discourse). These strategies include recasting, signaling to the students how they can self-reformulate, indicating where a reformulation is needed but handing this task over to the students, and modeling alternative ways of recontextualizing personal knowledge. Through linguistic and discourse choices that teachers make and discussion of relationship among language, meaning, and context that students are engaged in, students are able to successfully shift along the mode continuum from the students' current linguistic levels in English and their commonsense understandings of science to the educational discourse and specialist understanding. This study confirms further the important role of teacher's practice. It also suggests the value of teacher-student interaction and explicit teaching of mode shifts from everyday language to science discourse in developing academic language.

In brief, teachers' knowledge of academic language demands and linguistic features can have positive influence on students' academic language development. When teachers are capable of making the linguistic expectations explicit to students and teaching the linguistic elements that are characteristic of and valued by academic registers, students' academic language can be successfully developed.

Professional development

Scholars advocate preservice and inservice professional development as a key to provide teachers with high cognitive skills, disciplinary knowledge, and language knowledge so that their expertise in teaching academic language can be established (e.g., Gibbons, 2003; Lesley et al., 2007). A few studies report successful transfer from teacher training programs on teachers' readiness and students' achievement in

academic language development (e.g., Aguirre-Muñoz el al, 2006a, 2006b; Schleppegrell & de Oliveira, 2006; Walker & Bean, 2004).

Research suggests that professional development activities have positive influence on teachers' attitude and knowledge, as in the successful case presented by Schleppegrell and de Oliveira (2006). This study examines how teachers' knowledge of functional grammar influences instruction in a positive way. In this study, participants are history teachers attending workshops in summer institute. They use SFL tools to analyze passages from history textbooks. Teachers receive help from linguistic specialists to understand the challenges of history in linguistic terms and deconstruct the meaning in history using these linguistic terms. The linguistic constructs discussed in the study include sentence constituents, the meaning relationships between the parts of a sentence, complex noun phrases and the multiple meanings they present, time markers and connectors that structure a text, and the use of reference that builds cohesion. Teachers' reports and the authors' observations suggest that these history teachers are able to use the kind of linguistic analysis to engage students in talking about the historical events and participants presented in the texts.

The results of these teacher-training activities also show positive impact on students' learning outcomes. In the discipline of language arts, Aguirre-Muñoz el al (2006a) uses a variety of assessment tools to investigate how teachers' training in SFL can support teachers' teaching and students' academic language development. Based on the perception that direct instruction on linguistic structures of academic language is usually not a component of classroom instruction, the authors present a four-day teacher-training program on instructional strategies to incorporate functional grammar in

classrooms. A two-day follow-up comprised of four modules is to ensure the implementation in classrooms. Thirty-two language art teachers participate in the study, among which 21 are in the trained group and 12 are in the comparison group. A research approach incorporating both quantitative analysis and discourse analysis is adopted in this study. Teachers' survey, interview, and observation data indicate that, before this training program, teachers in general are unable to adequately expose students to functional grammar concepts. After the training program, however, two groups are differentiated, particularly in the writing instruction. Trained teachers offer instruction more directly and more specific to the needs of the ELLs. To the contrary, comparison teachers focus more on content and ideas, and on a broad and superficial level of writing instruction such as an overall essay structure.

This differentiation in instruction also has an impact on students' learning outcome. In this study, the Language Arts Performance Assignment (LAPA) scores are used to examine students' writing samples as the outcome variable. Qualitative differences are found in the level of functional grammar implementation between the trained and comparison groups. Students in classes with trained teachers have higher performance on LAPA than students in the classrooms with low implementation of functional grammar concepts. Furthermore, results from statistical analysis show that the level of functional grammar implementation is consistently the most important variable in predicting student performance on all four LAPA scores. It is more important than other variables such as L2 processing strategies, teachers' experience and content expertise, or feedback assessments.

Studies of this kind show the positive impact that professional development can have on students' academic language development. The professional development activities must enable teachers to identify, discuss, and apply a variety of academic language features that are specific to different content areas. A successful professional development program must prepare teachers for teaching academic language in secondary content area classrooms.

Developing Academic Language in History Classrooms

Many studies are specifically about the content area of history, which is the focus in the current study. In this section, I will explore studies that illustrate the high literacy demands of learning materials and practices in history classrooms, followed by the discussion of students' competencies in the discourse of history. A variety of academic language features that are prevalent in the content area of history will be identified. A positive impact of instructional practices that teach these features will also be reported.

Language demands in the discourse of history

In the discipline of history, the interaction between the reader and the text is always important. Historical meaning often is hidden in the text of history (Wineburg, 2001). To read and write in history, the authors' motivation, rationale, and goals are involved and must be interpreted. As in all content areas, learning history means learning the language of history. However, compared with science, history receives much less attention despite its importance in American schooling (de Oliveira, 2011).

The ability to read and write is essential to academic success in school history. Paxton (1999) points out the challenge of language of history in reading and writing for secondary students and suggests that a textbook-centered history classroom is dominant in many secondary history classrooms. Students must be able to read the

reading materials and access the language used by historians in this subject area. In historical texts, there are a variety of academic language features that present challenges to students (Achugar & Schleppegrell, 2004; Schleppegrell, 2004). Short (1994) analyzes the reading demands that middle school English learners encounter in history curricula. According to her findings, students must cope with long expository passages filled with abstract concepts (e.g., *liberty, propaganda*) to engage in classroom tasks. Researchers using SFL and discourse analysis have also made major contributions to the understanding of the historical discourses and the language patterns common in school history texts (e.g., Coffin, 2006a; 2006b; Martin, 2002; Unsworth, 1999).

For example, Coffin (2006a) argues that history has distinctive textual forms that need to be learned by history students. In her book, a systematic and comprehensive analysis of historical discourse introduces how language of history represents the motifs of time, causality, and evaluation effectively through the lexical and grammatical choices.

Time is a successive movement through space or continuous cycles. Each time movement has its own beginning, peak, and ending, which plays a significant role in historical discourse. To Coffin (2006a), macro-time constructs such as calendar time, chronology and their relation to historical narrative are a determining point of understanding historical perspective. Time is not only a logical system but also can function to make experiential, interpersonal and textual meaning. Coffin analyzes a range of grammatical and lexical resources for representing concepts such as the sequencing and segmenting of time. These linguistic choices include:

hypotactic temporal conjunction (conjunctions of hypotactic clauses that describes temporal relationship. e.g., *when, before*)

circumstance of time (when an event take places. e.g., *last year*)
conjunctive adjunct (he temporal resources that construe the beginning, continuation, and end phases of an event or activity. e.g., *then, first, finally*)
specialized abstract technical terms (e.g., *the Gold Rushes, the Second World War, the Cultural Revolution*)
temporal verbs or temporal circumstantial (verbs in any clauses that construe temporal relationship between two events. e.g., *ensued*)
relational clause (clauses that describe the temporal condition of an event. e.g., *when I was seven, after my sister was born*)

Another core concept of history is causality. In history, historians do not just tell a chronology of events. Instead, they use these events to explain how one thing leads to another. Causality is particularly important to students' understanding of historical text (Coffin, 2004; Achugar & Schleppegrell, 2005). Causality involves more significant connections than those of the temporal framework. In order to read and write successful history texts, students need to determine the causal effect from various events, organize these causal phenomena rhetorically, and assign different significance to different events (Coffin, 2006a).

According to Coffin (2006a), there are four functions of causality that linguistic choices achieve in historical text. They can enable and determine causation by using verbs such as *enable, influence, result in* or *make*. Cause can also be packaged as a noun or nominalization by using *result*, *effect*, or *reason* to realize abstract causation. In brief, causality in historical discourse is represented through a variety of linguistic choices including:

circumstance of cause (e.g., *because of, as a result of, due to*),
verbs (e.g., *resulted, led to*),
conjunctions (e.g., *because*),
conjunctive adjunct (e.g., *therefore, thus*), and
nominalizations (e.g., *effect, reason*).

Coffin (2006a) also delineates an appraisal framework in terms of graduation of intensity, attitude, and engagement. In historical texts, the presence of agency is usually minimized and the real historical actors are given least prominence so that the reader would not recognize them. Nevertheless, events and so-called facts in all historical texts are interpreted through the authors' perspective. Even though it is important to recognize the author's stance and negotiate alternative judgments and opposing perspectives within history, this appraisal framework is a suitable basis for pedagogical intervention to develop students' ability to read and write in history.

To sum up, students must be able to understand and use generalized, abstract nouns and specialized lexis in history. Students should show diminished reliance on chronology and embedding events as part of explaining or arguing. Moreover, students must use evaluative lexis as a means of appraising historical processes in terms of their historical significance. These linguistic choices work together to construct the concept of time, causality, and appraisal in historical writing. Despite the important role of linguistic features around time, causality and appraisal, teachers in history classrooms do not always articulate these linguistic features (de Oliveira, 2011; Schleppegrell, 2005). This calls attention to why and how teachers can help students to focus on language to understand content or express their historical understanding. Students must develop control on both form and function of texts to be successful in historical reading and writing.

Developing academic language in history

In the previous section, I discussed how to develop secondary students' academic language in different content areas. Among them, a number of studies address the content area of history specifically (e.g., Coffin, 2006a, 2006b;

Schleppegrell, 2005; Short, 1994; Zwiers, 2006). Studies have acknowledged the wide range of language demands including various genres and different language features as well as language learning opportunities in history classroom (Bunch, 2006; Schleppegrell, 2005). Also history teachers usually do not explain and instruct about these language resources before assigning students writing tasks in history classrooms (de Oliveira, 2011; Schleppegrell, 2005).

Zwiers (2006)'s study explores how to scaffold the development of academic language, disciplinary thinking, and content learning for non-native English speakers in middle school history class. Participants are 60 ELLs at early-intermediate or intermediate proficiency levels of English attending a five-week history-based English language summer program. The teaching approach focuses on six dimensions of historical thinking: background knowledge, cause, effect, bias, empathy, and application by examining professional models of persuasive essays in history. The persuasive features and mortar vocabulary (general academic vocabulary) and brick vocabulary (content-specific vocabulary) in the essay are the focus in the teaching approach as well. The data resources include the persuasive essays assigned by the teacher, audio recording of lessons, and student logbooks. The analysis shows that scaffolding in higher-order thinking and language features leads to students' development in cognitive and communication skills. This finding suggests that in order to teach students to learn to think, read, write, and talk about history like a historian, historical language needs to be modeled, scaffold, and practiced in the ways that historians think.

Another study by Coffin (2006b) uses a pre- and post- test research design to evaluate the impact of 'teaching-learning cycle' on students' writing. This approach

encourages students to consciously reflect on how language functions in creating historical meaning. In this approach, students are engaged in three phases. These phases are: deconstruction phase (students are introduced to model historical text of a specific genre through a range of activities and teacher input. After that they would explore the grammar and lexis in text such as nominalization), joint construction phase (students and teachers jointly negotiate and publicly write up texts representing the same genre), and independent construction phase (student work individually or in small groups to rework on the target genre). Selected students' texts written before and after the implementation of the cycle are analyzed. Results demonstrate the progress in students' control of text organization. A more purposeful organization and a clearer text structure could be seen in post-intervention texts, whereas improvement at grammatical features is not that evident. The study indicates that teacher training have successful influence on students' writing development and "teaching-learning cycle," a pedagogic strategy can encourage conscious refection on how language functions to create historical meaning.

The study of de Oliveira (2011) investigates the language resources used by eighth and eleventh grade students when writing an exposition in school history. Using a qualitative methodology, the study analyzes questionnaire data from 44 history teachers, interviews with four focus history teachers, and essay data from these four teachers' classes. Sixty-three strong essays and 26 weak essays are selected and rated by students' teachers. These essays are analyzed and the linguistic patterns that realize the language of history are identified. The language resources that successful 8th grade writers use include thematic choices to signal the organizational structure of texts and

cohesive resources such as pronouns and demonstratives to establish relationships between elements of discourse. The most distinguishing difference between successful essays and essays is in the way elaboration is used. Elaborating relationships are used to reiterate the main semantic notions presented in the texts. Less successful students use little of these elaborating resources. Also the resources used at the eighth grade level are amplified at the eleventh grade level. This study shows that construing evaluative meanings is especially relevant for writing an expository in history. Elaboration, or the way examples, clarifications, additional details, and explanations are provided, is the most distinguishing feature between essays considered "strong" and "weak." The findings also suggest that teachers have expectations on the way in which historical information is presented and developed.

All these studies examine students' academic language in the content area of history. These are mostly small-scale and qualitative studies. The foci are the language features of historical discourse including evaluation, time, and causality. These studies try to raise the awareness of teachers and students to how language resource constructs knowledge in history. The results also suggest that appropriate instructional practices have the potential of preparing students for reading and writing in historical discourse.

Gaps in the Literature

Overall, the growing literature on academic language ranges from linguistic analysis of written and spoken texts to descriptive studies of classroom practices. Three theoretical frameworks described in this study are: Cummins's initial cognitive approach of BICS and CALP, Gee's sociocultural perspective that illuminates the nature of academic language as the cultural practice of various disciplinary communities, and

linguistic perspective of SFL that provides linguistic analysis tools for connecting academic features to their functions and context. Various studies are grounded in different frameworks and a range of conceptualizations to explore the instructional practices that address the challenge of academic language in secondary students. Adopting SFL, academic language is defined as a variety of language resources that realize more formal and abstract styles and construe academic register in different disciplinary communities.

Nevertheless, a number of gaps exist in the current body of research. First of all, research literature with respect to academic language has been growing, but much has been written for ELLs, within the field of Second Language Acquisition and Teaching English to Speakers of Other Language. Academic language presents challenges to all students, not just ELLs. Recent reports (e.g., Berman & Biancarosa, 2005) have found that adolescents (both mainstream students and ELLs) are not able to read and write the specialized texts of secondary schooling. These reports provided striking evidence of students' limited academic language proficiency in academic reading and writing. Although mainstream students may encounter tremendous challenges in developing academic language to function successfully in content area classrooms, this field is highly underdeveloped and thus must be addressed. Therefore, academic language should be a concern for educators of students from a broad range of backgrounds and from content areas such as science, mathematics, social studies, and language arts.

Second, the need for my study is established by the fact that current research focuses on college level learners. Current research does not pay much attention to adolescent learners (i.e., secondary schools). An extensive literature focuses on English

for special purposes and university learners rather than adolescent students and the demands of secondary schooling (e.g., Adamson, 1990), although the demands of academic language are extensive for secondary students. There is a lack of attention to students' needs in developing academic language in secondary schooling. Therefore, more attention must be paid to academic language use in secondary schooling.

Third, current academic language research looks at academic language primarily from the perspective of vocabulary as if academic language consisted solely of vocabulary. Students must master academic vocabulary words in order to comprehend the concepts and display their acquisition of these concepts in any specific discipline (Beck et al., 2002). As lexical choice plays a critical role in academic language, researchers focus more on academic vocabulary instruction and believe in the positive effects of academic vocabulary intervention on academic language development (Snow, 2008; Calderón, 2007). However, academic language is more complex than academic vocabulary only and should be examined using a more comprehensive approach. A mere focus on academic vocabulary will impede students' academic language learning. The nature of academic language including its grammatical features and discourse structures must be identified and taught to develop students' academic language (Bruna, et al., 2007). The importance of these academic language features must be acknowledged to a full extent and also incorporated in the instructional practice.

In addition, current academic language research focuses on published materials including state standards, textbooks, reading materials, and oral texts transcribed in teachers' instruction and teacher-student interaction rather than students' actual use of academic language. The current research does not shed light on how academic

language use relates to students' reading and writing ability. Understanding students' actual ability of coping with academic language is critical to the design of effective instruction and remediation. Based on students' actual capabilities in handling academic reading and writing, it is also significant to know secondary students' actual use of academic language and how this use interacts with students' reading abilities. A number of studies that examine adolescents' academic writing focus more on successful benchmarks in students' essays and pay little attention to those students of different proficiency levels (Christie & Derewianka, 2008). Although we assume that students with higher reading abilities can handle academic language more successfully, current research is unable to reveal how students' use of grammatical and lexical resource differ across reading groups. A comprehensive analysis of students' writing allows more insight into how students grapple with academic language demands and exploit features at semantics, syntax, and pragmatics levels to represent their learning in content area knowledge.

Another gap of research is the relationship between this use of academic language features and overall writing qualities. In the current research, whereas some academic language feature(s) is/are usually analyzed as an indicator of students' academic language ability (e.g., Coffin, 2006), we do not know how academic language features affect the overall writing quality. Knowing the interrelationship between students' use of academic language features and their reading abilities and academic writing qualities will contribute to the ongoing discussion regarding adolescent students' literacy development in content area learning. Therefore, this research gap must be addressed.

Last but not least, academic language research typically involves small-scale studies (e.g., case studies of 1-5 students). Due to the variety and complexity of academic language features and discourse analysis, researchers tend to employ descriptive studies in analyzing these texts. Most of the current studies are limited to case or small-scale study, and thus cannot offer specific suggestions to effective research-based interventions. Although these studies provide in-depth information about the demands of academic language, larger-scale studies with larger groups of participants may provide a more comprehensive picture of adolescents' academic language competences. A method that enables a more convenient and practical analysis and interpretation of academic language features in a large size of writing samples should be generated to better guide operationalization and practice in academic language. Moreover, quantitative studies are needed to study students' use of academic language in order to inform the direction and magnitude of students' academic language development.

Overall, although a theoretical groundwork has been established to conceptualize academic language, the essential role of academic language features for secondary mainstream students has not been fully acknowledged in both research and instructional practice. The current literature should pay more attention to all linguistic features of academic language and also provide a more comprehensive and detailed picture of mainstream students' actual ability in coping with these features in content area learning. It is important to know the interrelationship between use of academic language features and students' reading abilities and writing qualities. The answers to the questions above may help content area teachers recognize their students' strengths

and needs in academic language acquisition and also guide them to model and scaffold academic language and content area instruction.

In Chapter 2, the theoretical framework for the study was presented. In addition, a review of the relevant literature illustrated key theoretical features. Next, the literature on teaching and learning academic language was reviewed. In Chapter 3, the method to answer the research questions will be presented.

Table 2-1. Academic text and written text

Text (1)	Text (2)
Capsaicin causes a complex series of events to occur in the body. It triggers nerve terminals to release "substance P," a chemical that transmits the impulse interpreted by the brain as "Pain!" The stimulus also causes the brain to release endorphins, the body's natural painkillers. Endorphins produce a pleasant sensation of well-being, which may explain, in part, why people eat hot peppers even though the initial effect is burning.	M: *And uh, I-I tried it with different colors, with both of them out, one came out, this one just came out blue, and I don't know, what this color is.* (p.116) M: *But you have, first you have to stick it into the wax, and then water, and then keep doing that, until it gets to the size you want it.* (p. 117)

Table 2-2. Academic texts and interactional text in clause level

Text (1)	*Text (2)*
(1a)*Capsaicin causes a complex series of events to occur in the body*.	*(2a)* And uh, I-I tried it with different colors, with both of them out,
(1b)*It triggers nerve terminals to release "substance P,"*	*(2b)* one came out,
(1c) *a chemical that transmits the impulse interpreted by the brain as "Pain!"*	*(2c)* this one just came out blue,
(1d)*The stimulus also causes the brain to release endorphins, the body's natural painkillers.*	*(2d)* and I don't know
(1e)*Endorphins produce a pleasant sensation of well-being,*	*(2e)* what this color is
(1f) *which may explain, in part,*	*(2f)* But you have, first you have to stick it into the wax,
(1g) *why people eat hot peppers*	*(2g)* and then [sticking it into] water,
(1h) *even though the initial effect is burning.*	*(2h)* and then keep doing that,
	(2i) until it gets to the size

	(2j) (and) you want it.

Table 2-3. Clause types

Type	Definition	Example
Main clause	The only clause in a simple sentence, the initiating clause in a paratactic sequence, or the dominant clause in a hypotactic clause complex.	*Capsaicin causes a complex series of events to occur in the body.*
Hypotactic clause	Hypotactic clauses are dependent on but not constituents of another clause. They are traditionally called: subordinate clauses that participate in discourse structuring.	*why people eat hot peppers*
Paratactic clause	Paratactic clauses are linked to the main clause with a coordinating conjunction or merely juxtaposed. Direct quotations are also included. Interactional language relies heavily on paratactic clauses to link from clause to clause.	*and then [sticking it into] water,*
Embedded clause	Embedded clauses are constituents of a larger clause in which they are embedded.	*a chemical [that transmits the impulse interpreted by the brain as "Pain!"]*

Table 2-4. Register features of academic language

Situational Expectations (Context)	Grammatical and Lexical Features (Register)	
Display Knowledge in a dense and abstract way	*Experiential Features* Specialized, and technical, and abstract nouns Long and Complex Nouns Nominalization	Lexical density (Overarching feature of academic language)
Be authoritative	*Interpersonal Features* Declarative mood structure and the use of Thematic patterns to realize authoritativeness and distance	
Structure text in expected ways	*Textual Features* Clause combining strategies Methods of Thematic development	

Table 2-5. Genres of schooling and their language features

Genre	Purpose	Register Features
Recount	Retells a sequence of events, based on personal experience.	Personal pronouns; additive and temporal conjunctions; past tense; mainly action verbs (doing verbs).
Narrative	Reports and evaluates problematic events and outcomes.	Variety of verb tenses; embedded clauses; expand noun phrases; variety of verbs (including doing verbs, thinking verbs, being verbs, and etc.).
Procedure	Reports a sequence of events with general participants.	Timeless; simple present tense; action verbs (doing verbs).
Report	Organizes and classifies information by relating a set of facts.	Timeless verb; generic participants that are realized by technical noun phrases; and expanded noun phrases with embedded clauses and prepositional phrases, being verbs.
Account	Tells why things happened in a sequence.	Nominalization of events; relational verbs realizing causal relationships.
Explanation	Explains and interprets a phenomenon.	Logical organization; timeless verb; expanded noun phrases; being verbs; variety of clause Themes.
Exposition	Proposes thesis, presents different views, and supports the thesis with evidences	Expanded, generalized and abstract noun phrases, nominalization; logical connectors and modal verbs; declarative mood and third person; Makers of contrast, classification and condensation.

Note: This table is adapted from the Table of *Some Genres of Schooling* (Schleppegrell, 2004, p. 85).

CHAPTER 3
METHODOLOGY

The purpose of Chapter 3 is to describe the methods used in the collection and analysis of data. Specifically, I describe research site, data collection procedures, and data analysis methods including all the variables and statistical analysis.

Quantitative methods and linguistic analysis were employed based on the research questions of the present study. The goal was to examine adolescents' use of academic language in historical writing and determine whether such use is in any way associated with their reading ability and writing quality. Specifically, my study sought to address the following research questions:

What academic language features can be observed in 9th grade students' historical writing and what functions do these features serve in historical meaning making?

Does academic language use differ according to students' reading ability?

Does academic language use differ according to the quality of students' historical writing? That is, to what extent does the use of academic language predict the overall quality of students' historical writing?

Research Site

In this study, a local high school BG was selected as the research site. BG is a public high school located in a north central Florida town. It was the largest public high school in the town and served over 2600 students from 9th to 12th grades. In 2006, BG had 24 students for every full-time equivalent teacher, while the Florida average was 16 students per full-time equivalent teacher. In 2007, the percentage of White, Black, Hispanic, Asian American, multiracial, and Native American were, respectively, 64%, 21%, 8%, 5%, 3%, and ＜1%. Of all the students, 52% were male. Twenty percent were eligible for free or reduced-price lunch, which was much lower than the 45% of the state average student economic level. Moreover, 14% of the school population was identified

as talented or gifted, whereas 13% of the school population participated in special education programs.

BG high school consistently received high marks by state and federal standards. It received an 'A' rating for three consecutive years. In 2009, Newsweek ranked BG among the top 5% of high schools in the nation. On the 2009 FCAT, 64% of BG high school ninth graders met or exceeded standards in Reading. This was higher than the school district's average of 53%, and higher than the Florida state average of 47%. However, BG did not make Adequate Yearly Progress (AYP) in 2009. Under the provision of No Child Left Behind, a school makes AYP if it achieves the minimum levels of improvement determined by the state of Florida in terms of student performance and other accountability measures.

BG high school was located in a university town near a renowned public university. The school had close connection with the university through student teachers and research faculty. More than half of the high school teachers had a Master degree and they formed a faculty team with national reputation.

Data Collection

The data were collected from 13 ninth-grade classrooms at the BG high school in the fall of the school year 2009-2010. This grade level was selected because students in ninth grade are transitioning into high school where academic language is particularly challenging and important in learning disciplinary knowledge.

Background

For ninth grade, world history was a mandatory course. When students moved into high school from middle school, their eighth grade teachers made recommendations on their placements in all core subjects. For world history, there were

three levels: Regular, Honors, or Advanced Placement (AP). However, this decision could be overwritten based on students' individual needs and parents' opinions. The AP class was college-bound and its students took the AP test at the end of the school year, 2010 May. The Honor track students were those who were at an advanced level in the subject of world history but not ready to take the college level class yet. The regular students were considered as those who were the lowest achieving students in this subject. According to the principal and teachers at BG high school, the decisions regarding placement were closely related to their 8th grade Florida Comprehensive Assessment Test (FCAT) scores. For example, in the current regular world history class, most students had a FCAT reading score at Level one or two. Those who were recommended to regular classes but had a reading score of four were usually moved into honor or AP classes.

For the purpose of this study, three teachers, recommended by the Principal of BG, were contacted and they consented to collect data in their classrooms. All three teachers possessed a Master degree and teaching experience of more than five years. The AP teacher had a Master degree in Social Studies Education and twenty years' experience of teaching. The Honors teacher had a Master degree in Social Studies Education too and had taught for five years. The Regular history teacher's Master degree is in Reading Education and she had taught in this subject for ten years. The class size varied from 15 to 28 students. All the classes, except AP world history, were exclusively for ninth graders. The number and size of each class ensured that there was a minimum of 25 students in each level of the world history class.

The curriculum for ninth grade history was aligned with ninth- to twelfth- grade state standards for history. While utilizing historical inquiry skills and analytical processes, the curriculum included significant events, figures, and contributions of medieval civilizations (Byzantine Empire, Western Europe, Japan), Islamic, Meso and South American, and Sub-Saharan African civilizations. Students also needed to analyze the causes, events, and effects of the Renaissance, Reformation, Scientific Revolution, and Age of Exploration and the causes, events, and effects of the Enlightenment and its impact on the American, French and other Revolutions. Also students must understand the development of Western and non-Western nationalism, industrialization and imperialism, and the significant processes and consequences of each, recognize significant causes, events, figures, and consequences of the Great War period and the impact on worldwide balance of power as well as significant events and people from the post World War II and Cold War eras. The impact of classical Greco-Roman civilization on modern western civilization was one of the first chapters in this curriculum. Different levels of world history classes differed to the depth and breadth of learning but the content and skills covered were similar.

All these teachers believed their curriculum and instruction should build a nurturing and motivating environment for all the students. They also believed that history learning must involve a good comprehension of the course materials and an active discussion about important topics. Teachers' instruction used mostly whole class lectures and some discussions. Students needed to read the textbook at home and bring their understanding of the textbook to school. In classes, they listened to teachers' synthesis of textbook and then finished worksheets. In terms of assignments, the AP

teacher gave free-response questions every week and students practiced them as an important part of the AP world history exam. The Regular students and Honors students, on the other hand, rarely did free-response questions in their regular world history class because the teachers believed students were not capable of answering free-response questions successfully in the subject. The regular history teacher usually didn't require students to write essays in her class. A week before the writing task, she instructed students in Regular class how to write essays in history. Her instruction focused on cohesion and organization. Students were advised to write five paragraphs and provide evidence for any comparison they made. Students in Honors class, on the other hand, didn't get any specific instruction regarding how to write an essay in history.

Two weeks before the writing assignments, in order to get permission for students' participation in this study, three world history teachers sent consent forms approved by Institutional Review Board (IRB) and the local school district to all ninth graders' parents or guardians. In total, 190 forms were distributed and 160 of them were returned to the teachers. Among the parents or guardians, 148 consented their children's writing samples and FCAT data being used in this study. Through the entire study, all participants' names were anonymous and all personal information was kept private and confidential.

Participants for my study were 84 ninth-graders (49 male, 35 female) enrolled in a high school world history class. Please refer to Table 3-1 that summarizes participants' features. Sixty-four students' data were disregarded in my study because (a) 12 of them came from other countries or private schools and thus did not have a FCAT score; (b) 29 students did not complete their essay and thus were not included; (c)

23 students in AP classes came from other grade levels (10, 11 and 12th) and were not included either. This group of 84 ninth-graders was an academically diverse group with varying levels of reading proficiency. According to a recent state high stakes reading assessment (i.e., Florida Comprehensive Assessment Test), 27 of the students were at levels 1 and 2 (low-achieving), 29 at level 3 (average), and 28 at level 4 & 5 (high achieving).

Procedures

Participants were asked to write an essay to compare and contrast the impact of Greek culture and Roman culture on modern societies including European or American modern societies. The writing was completed in class (50 minutes) as part of the course assignments. The procedures are described as below.

Since 2009 August, through emails, phone calls, and meetings, the researcher contacted three classroom teachers recommended by the principal and discussed the possible genres and topics that participants wrote about. Since the present study compares the different uses of academic language by students of different reading abilities, the prompt about which participants write must be identical. The writing tasks must grow out of the content of each level's curriculum as well. As mentioned earlier, the history classes of these three levels covered the same historical period and many similar topics but they were discussed in different breadths and depths. To align the instruction across reading and writing groups, in an October 2009 meeting with all three teachers, a prompt was created to address the content taught in all three levels of world history classes. All three teachers ensured that these topics were discussed in their classes in detail. The following prompt was decided after the meeting: to compare and

contrast the impact of Greek culture and Roman culture on modern societies in America or Europe.

Teachers decided the writing session date based on their curriculum delivery and time arrangements. All teachers met together in the department meeting and decided to conduct the writing assignments in the first week of December in 2009. By the time this writing task was conducted, all three levels had completed the unit of Greek and Roman civilization. Therefore, student participants in all three levels had been taught about Greek and Roman civilization and were familiar with the content.

In all three levels of classes, student participants were notified about this writing task in the beginning of the learning unit so that they could be prepared for the content. The classroom teacher was visited by the researcher before and after the writing session and the researcher observed each class for at least four class periods during the unit. The writing sessions were also observed in order to record the context of these writing tasks and provide contextual understanding for further analysis.

The participants' academic writing samples in world history classes were collected in December 2009. The classroom teacher in the natural context of history instruction managed the writing session. That is, in one class period of world history class (regular, honor and AP), each student was told by the history teacher to compose one text that instantiated the genre of historical comparative essay. As I mentioned before, AP students practiced writing in the genre frequently but they didn't receive specific instruction before this task. Honors students didn't receive any instruction either. The regular students did receive some instruction with respect to how an essay could be organized.

In the writing session, the teachers delivered similar directions across different levels. After the participants came to each classroom and the bell rang, the teacher in each classroom handed each student a piece of paper that outlined the prompt and directions to finish the prompt. After each student in the classroom got the prompt paper, the teacher gave the following instruction:

> *Boys and girls, today you will write an essay that compares and contrasts the impact of Greek culture and Roman civilization on the modern societies in America or Europe. You will finish the essay in this class period. Please look at the directions: you should spend 5 minutes organizing or outlining your essay. Your essay should have a relevant thesis and support that thesis with appropriate historical evidence. Your essay should address all parts of the question, make direct, relevant comparisons, and analyze relevant reasons for similarities and differences. Please include all the elements of a good essay and write as much as you can. Also if you need more time after this class period to finish the essay, you can let the teacher know and move to a quiet space to finish it.*

After this instruction, no further information about task requirements, editing, or revising was provided. During the writing task, the participants worked independently in their original classrooms. Teachers provided lined paper and participants could ask for additional paper. All participants in the AP, honor, and regular world history classes were given a full class period (50 minutes) to write. Fifteen participants in regular world history classes did take longer time (though less than 70 minutes) to try to complete their essays and five of their essays were included in the analyzed data set. Those disregarded writing samples were due to a lack of FCAT data and incompletion, as explained previously.

After each writing task, the researcher made copies of each student's writing. Then, I typed these texts into a computer as electronic files for further analysis. The corpus of writing samples was the primary data set in this study. The typing was

verbatim including spelling and grammar errors. When there was illegible writing, within-text surmises were made on participants' intended meaning in the context of the task. These surmises were marked in the bracket right after the indistinct part.

Data Analysis: Variables

A history teacher and a language arts teacher rated each student text holistically for overall writing quality (1-5, with 5 being the highest) using an instrument adapted from a state high-stakes writing assessment rubric. Two trained scorers coded the essays for presence of academic language features including academic vocabulary, embedded clause, expanded noun phrase, nominalization, and lexical density. For each of the language features, a ratio score was computed by dividing its frequency of occurrence over the total number of non-embedded clauses in the text. Finally, statistical analysis was conducted to examine the relationship between each of these language features and reading scores as well as holistic rating of writing quality. The details regarding all variables are provided below.

Reading Abilities

To answer the three research questions posed at the outset of Chapter 3, the participants were grouped based on their reading abilities as measured by participants' achievement level in Florida Comprehensive Assessment Test (FCAT) reading test. All student participants' reading scores from the FCAT in 2009 spring were requested from the school as a measurement of the participants' reading abilities.

As the latest version of Florida's statewide assessment program, FCAT measures student performance on selected benchmarks in reading, mathematics, writing, and science that are defined by the Sunshine State Standards (SSS). Members of a school's staff, in grades 3-11, administer the FCAT to participants on regular school

days. The FCAT Reading section uses various written materials to measure broad areas of reading, language, and cognitive ability and assess across four content clusters: reading comprehension in the areas of words and phrases in context, main idea, comparison/cause and effect, and reference and research. Six to eight reading passages with sets of 6-11 questions based on each passage can be categorized as two types. Informational passages are taken from magazine and newspaper articles, editorials, or biographies and provide facts about a particular subject. Literary passages are taken from short stories, poems, folk tales or novels and are written primarily for the reader's enjoyment.

The FCAT reading test is administered within a two-week period in the spring and uses a scale with results between 100 and 500. Participants' performance on the FCAT reading test is described as Achievement Levels, based on both scale scores and developmental scale scores, ranging from 1 (lowest) to 5 (highest). Levels 1 and 2 reflect below grade-level performance in reading, with Level 1 being the lowest indication of reading performance. Levels 3 and above represent proficiency in reading comprehension at or above grade-level standards. Students scoring in Level 4 and 5 indicate that they have success with the most challenging content of the Sunshine State Standards (SSS). A student scoring in Level 5 answers most of the test questions correctly, including the most challenging ones.

In my study, the FCAT reading test was selected as the measurement of participants' reading abilities, as it is a statewide assessment of participants' reading ability in school-based texts at the elementary, middle, and high school levels. This test is directly linked to the Florida SSS and the competencies found in Florida's System of

School Improvement and Accountability. Therefore, it shows participants' mastery of academic language that is required by school and academic setting.

Based on their FCAT reading scores, participants were placed into three groups: low achieving reading group of achievement level 1 and 2; average achieving reading group of achievement level 3; and high achieving group of achievement level of 4 and 5. Reading Ability was an independent variable in the current study. Three groups were: 27 students in the low-achieving group (at levels 1 and 2), 29 in the average-achieving group (at level 3), and 28 in the high achieving group (at level 4 and 5).

Writing Quality

Holistic scoring was employed as a measure of the essays' writing qualities. In the present section, I will discuss the raters, rubric, training and reliability, and the writing groups engendered.

Raters

In order to provide information on participants' mastery of historical content and writing crafts, all the writing samples were graded holistically by both a world history teacher who was familiar with the content of world history and knew the curriculum in all three levels of world history classes (regular, honor, and AP) and a language arts teacher who had an in-depth understanding of writing requirements in Florida secondary schools. In terms of content, the evaluation focused on the accuracy (whether the historical fact and evidence provided in the essay was true or false) and the completeness (whether every aspect of the question was addressed including substantive thesis and appropriate evidence). Participants' writing competency in organization and mechanics were also taken into consideration.

Rubric

Holistic quality scoring was used in my study as a subjective assessment to provide measurement on the overall quality of participants' academic writing. The scoring rubric was based on FCAT Writing Rubrics, Grade 10, downloadable from FCAT website (there is no FCAT Writing test in Grade 9). FCAT writing rubrics evaluates focus (how clearly the paper presents and maintains a main idea, theme, or unifying point), organization (the structure or plan of development: beginning, middle, and end; and the relationship of one point to another), support (the quality of details used to explain, clarify, or define depending upon word choice, specificity, depth, credibility, and thoroughness), and convention (the punctuation, capitalization, spelling, and sentence structure). In this study, the genre in which students wrote was a comparative essay. After consultation with all three teachers, the importance of analyzing, comparing, and contrasting was also included in the rubrics by expanding the scope of focus and taking into account the differences and similarities that student writers elaborated and exemplified.

Overall, writing quality of all texts was evaluated using a 5-point holistic scale, with a score of 1 representing the lowest quality and a score of 5 the highest quality. Each score level had different requirements on content, organization, and mechanics. Below is the holistic scoring rubric on the quality of writing in each essay. This Rubric was adapted from FCAT Writing Rubric — Grade 10 downloaded from FCAT website.

5 Points

Content: The essay addresses all parts of the question and substantiates thesis with appropriate and accurate historical evidence. It makes at least 2 relevant, direct comparisons between or among items under consideration and analyzes at least one reason for a similarity or difference identified in a direct

comparison.

Organization: The organizational pattern provides for a logical progression of ideas. Effective use of transitional devices contributes to a sense of completeness. The writer may use creative writing strategies.

Mechanics: The writing demonstrates a mature command of language with freshness of expression. Sentence structure is varied. Few, if any, convention errors occur in mechanics, usage, punctuation, and spelling.

4 Points

Content: The essay addresses all parts of the question and substantiates thesis with mostly appropriate and accurate historical evidence. It makes at least 2 relevant, direct comparisons between or among items under consideration and analyzes at least one reason for a similarity or difference identified in a direct comparison.

Organization: The writing's organizational pattern provides for a logical progression of ideas. Effective use of transitional devices contributes to a sense of completeness.

Mechanics: The writing demonstrates a mature command of language, and there is variation in sentence structure. The response generally follows the conventions of mechanics, usage, punctuation, and spelling.

3 Points

Content: The essay addresses most parts of the question and partially support thesis with some appropriate historical evidence. Most of the evidences are accurate historical facts. It makes at least 1 relevant, direct comparison between or among items under consideration and analyzes at least one reason for a similarity or difference identified in a direct comparison.

Organization: The ideas are loosely related. An organizational pattern is apparent, and it is strengthened by the use of transitional devices. Word choice is adequate, and variation in sentence structure is demonstrated.

Mechanics: The response generally follows the conventions of mechanics, usage, punctuation, and spelling.

2 Points

Content: The essay addresses some part of the question and partially support thesis with some historical evidence. Some of the historical facts are accurate. It makes some comparison between or among items under consideration.

Organization: The writing may lose focus by including extraneous or loosely related

ideas. The organizational pattern usually includes a beginning, middle, and ending, but these elements may be brief.

Mechanics: Word choice may be limited, predictable, or vague. Errors may occur in the basic conventions of sentence structure, mechanics, usage, and punctuation, but commonly used words are usually spelled correctly.

1 Point

Content: The essay addresses little or none of the question and provides some historical evidence.

Organization: The writing may lose focus by including extraneous or loosely related ideas. The response may have an organizational pattern, but it may lack a sense of completeness or closure.

Mechanics: Limited or inappropriate word choice may obscure meaning. Frequent and blatant errors may occur in the basic conventions of sentence structure, mechanics, usage, and punctuation, and commonly used words may be misspelled.

Training and reliability

The two raters were a world history teacher who taught the subject across all levels and a language arts teacher who was familiar with both the prompts in this study and the writing requirements in the state of Florida. Both of these teachers had three years of teaching experience and a Master degree with coursework in literacy.

Raters received a 50-minute training period in which they learned to use the 5-point scale by studying the rubrics and applying the rubrics on the examples of participants' writing. In a 30-minute meeting, two raters discussed with the researcher their understanding of the history content and their expectation on content, organization, and mechanics in the writing. The training also involved the rating of a set of five benchmark writing samples, which had been gathered based on the original world history teachers' grading. These benchmark essays were selected by the three world history teachers and the researcher in a meeting and were believed to meet the

requirements for each level (1-5) (see Appendix A for these benchmark writing samples). In another fifty-minute session, the raters graded with the researcher together on the texts. An inter-rater agreement of 100% on all five writing samples was achieved after the training session.

After the training, the two raters rated the texts independently. Following that, the raters met with the researcher to discuss their ratings in two 50-minute sessions. The raters discussed any divergence in scoring and explained to the group why he/she gave that score. After the discussion, the disagreement would be accepted if it still persisted. The final writing score thus averaged two teachers' scores. This decision was based on the assumption that a teacher of history and a teacher of language arts had slightly different perspectives in grading. Both of their perspectives were respected and accepted. The Pearson coefficient suggests the correlations between two raters' rating was .88, which was relatively high. This confirms the outstanding inter-rater reliability in the rating of writing quality.

Writing groups

As indicated above, two teachers, one high school history teacher and one high school language arts teacher, graded the writing samples (N=84). They gave a score (from 1 to 5) for each text based on the same rubric we provided. In the analysis, I averaged the two sets of scores that the two teachers provided, which would be the final writing score of each essay. The mean final essay score for the entire sample was 3.18 (SD = 0.96). This final score was the dependent variable of Writing Quality.

Students' essays were then placed into three groups. Please see Table 3-2 for the details. To ensure the equivalent size of three groups, the 84 graded essays were split into three groups based on the split of 1.0-2.5; 2.6-3.5; 3.6-5.0, resulting in a low-

proficiency group of essays that received scores between 1.0 and 2.5 (n = 28), an average-proficiency group of essays that received scores between 2.6 and 3.5 (n = 29), and a high-proficiency group of essays that received scores between 3.6 and 5 (n = 27). Among those essays in the low-proficiency group, the majority had scores of 2.5 (n = 14); among the average-proficiency group, the majority had scores of 3.0 (n = 18) and scores of 3.5 (n = 11); among the high-proficiency group, the majority had scores of 4 (n = 16). The major goal of this grouping was to gain understanding the different uses of academic language features in essays with distinct writing qualities.

Academic Language Features

A number of academic language features were the dependent variables in my study. They were selected based on the research reviewed in Chapter 2. As in the previous literature review on academic language, a number of academic language features, including embedded clause, high lexical density, and expanded nouns phrase are important features in academic language. Adolescents are expected to use these features proficiently in their academic writing in their content area learning. Therefore, the academic language features examined in the language analysis included academic vocabulary, expanded noun phrase, embedded clause, and nominalization. Lexical density was also included in the analysis as this study used this as a feature to examine students' ability of using lexical items rather than relying on grammatical items in their academic writing.

After collecting all participants' writing texts, I read through the corpus of texts in order to get a basic understanding of the range of texts produced by participants. Before all linguistic analysis, the first step was to segment each text into clauses: embedded (clause that serves as the participants of another clause), paratactic (clauses that are

linked to the main clause with a coordinating conjunction or merely juxtaposed), hypotactic (clauses that are dependent on but not constituents of another clause), non-finite clauses (clause with non-finite verbs), and main clause (the only clause in a simple sentence, the initiating clause in a paratactic sequence, or the dominant clause in a hypotactic clause complex). These clauses were numbered.

After this step, the first feature to be analyzed was academic vocabulary. To perform the examination of academic vocabulary in the corpus of text, I used Coxhead (2000)'s Academic Word List (Appendix B). This list was selected because it contains 570 word families that constitute a specialized vocabulary with a good coverage of academic texts, regardless of the subject area. This list represents a broad range of academic texts and the words were selected based on a large corpus of text. It also serves primarily educational purposes and thus matches the goal of my study.

In the preset study, the full set of text was then coded by using a macro in the software of Microsoft Office. The Marco was written to highlight every occurrence of academic vocabulary in the corpus of essays. Each occurrence of the same word (or its derivations) was counted as an individual occurrence. The researcher then calculated the occurrences of academic vocabulary in each essay. A ratio score was computed by dividing its frequency of occurrence over the total number of non-embedded clause in the text.

Next, other variables of language features were analyzed. Overall, all the language features of interest were in square brackets and notes were marked when necessary. After that, each incident of language feature was sorted out and categorized

into four sets: academic vocabulary, embedded clause, expanded noun, and nominalization. All values in these analyses were accurate to the second decimal place.

In order to perform a noun analysis, any expanded noun phrase in any position was identified. Based on the previous literature review, expanded noun phrases were defined as those noun phrases that had post-modifiers such as an embedded clause or a prepositional phrase. The total number of expanded noun phrases in each text was computed. The ratio of the number of expanded noun phrases to the total number of non-embedded clauses in each text was the dependent variable of expanded noun phrase.

Embedded clauses in the texts were also analyzed. Each clause in any text was already identified as the different types of clauses. A tally of the embedded clauses used in all academic writings and by each participant was maintained. The ratio of the number of embedded clauses to the number of all clauses was another dependent variable.

Based on the notion that nominalization is a very important language resource of the academic-ness in the historical discourse, nominalization was selected as a dependent variable. In this analysis, nominalization was sorted out and analyzed. Nominalizations such as *influence,* r*eason*, or *effect* that also contributed to an external causality in the text was included in the identification of all nominalizations. The ratio of the occurrences of nominalizations to the number of non-embedded clauses in each text was another index of dependent variable examined in the analyses.

I then calculated the summary feature: lexical density. To calculate lexical density, content lexical items or content words including nouns, verbs, adjectives, and important

adverbs in each text were counted. The number of non-embedded clauses was also collected. Lexical density was calculated as the number of content words/the number of non-embedded clauses.

Inter-rater Reliability.

To ensure the inter-rater reliability in the linguistic analysis of the corpus, a second rater other than the researcher performed linguistic analysis. Although the second rater was familiar with Schleppegrell's (2004) work on academic language and the genres of school history as well as the goals and questions of the present study, he still received specific information as to each academic language feature. One fifth of all texts were rated by the second rater, meaning that he analyzed 17 texts for all grammatical features (expanded noun phrase, nominalization, embedded clause, and lexical density). An agreement at 100% was achieved for each language feature between the two raters except for nominalization at .88, and lexical density at .93, which were all better than chance.

Statistical Analysis

To answer the first research questions, I used descriptive statistics to determine the range, mean, and standard deviation (SD) for each linguistic feature. Different means and standard deviation of each feature were compared. Then, various analyses of variance procedures were carried out to investigate the observed differences further.

For the second research question, a one-way Multivariate Analysis of Variance (MANOVA) was conducted to explore differences in using academic language features among participants of different reading abilities. I planned to examine the differences in academic language features including academic vocabulary, lexical density, expanded noun phrase, embedded clause, and nominalization broken down by reading abilities.

MANOVA is a generalized form of univariate analysis of variance (ANOVA). It helps answer the following questions:

Do changes in the independent variable(s) have significant effects on the dependent variables;

What are interactions among the dependent variables; and,

What are interactions among the independent variables?

MANOVA is useful in experimental situations where at least some of the independent variables are manipulated. It has several advantages over ANOVA (Harwell, 1988). First, by measuring several dependent variables in a single experiment, there is a better chance of discovering which factor is truly important. Second, it can protect against Type I errors that might occur if multiple ANOVA's were conducted independently. Additionally, it can reveal differences not discovered by ANOVA tests.

MANOVA is a substantially more complicated design than ANOVA and, therefore, there can be some ambiguity about which independent variable affects each dependent variable. Thus, many potentially subjective assumptions must be made. These assumptions will be addressed in the data analysis. Moreover, one degree of freedom is lost for each dependent variable that is added. The gain of power obtained from decreased error variance may be offset by the loss in these degrees of freedom (Harwell, 1988).

For the third research question, multiple regression (backward step-wise) was conducted. It is a statistical technique that allows us to predict someone's score in one variable while controlling for the effects of other variables. Multiple regression is the most effective at identifying the linear relationship between a dependent variable and a combination of independent variables when its underlying independence assumptions

are satisfied: each of the metric variables are normally distributed, the relationships between metric variables are linear, and the relationship between metric and dichotomous variables has equal variance (Cohen, Cohen, West, & Aiken, 2003).

In Chapter 3, the methods of data collection and data analysis were described. Eighty-four writing samples were included in the corpus of texts and the occurrences of five academic language features in each text were identified and computed. Statistical analyses including MANOVA and multiple regression were then conducted to examine the association between these features and students' reading ability and writing quality. The findings from these analyses will be presented in Chapter 4.

Table 3-1. Features of students

Features	Group	Number of students.
Students	Participants	84
	Non-participants	64
Gender	Male	49
	Female	35
Class level	Regular	32
	Honors	37
	Advanced placement (AP)	15

Table 3-2. Writing groups

Writing group.	Writing scores.	Number of students.
1 (low-proficiency)	1.0-2.5	28
2 (average0-proficiency)	2.6-3.5	29
3 (high-proficiency)	3.6-5.0	27

CHAPTER 4
FINDING

In Chapter 4, the findings of three research questions will be presented. This chapter is organized as three sections. Each section addresses one research question and describes the test of the hypothesis posed for answering the research question. Examples of academic features are also provided.

Research Question I: Descriptive Statistics

Research Question I explored the academic language features that students used in their historical writing. Regarding the use of academic language features, Table 4-1 shows the mean scores and standard deviations of each dependent variables (using SPSS): academic vocabulary, expanded noun phrase, embedded clause, nominalization, and lexical density. By referring to the Table 4-1 of descriptive analysis, we can further analyze how students used academic language features in their essays.

Academic Vocabulary

Academic vocabulary refers to specialized academic words that are prevalent across different academic disciplines. In this study, the Academic Vocabulary List by Coxhead (2000) was used. The descriptive analysis suggests that, in the corpus of these high school students' academic writing, the average academic vocabulary per non-embedded clause used was .41 with the standard deviation of .20. In other words, in every ten non-embedded clauses, only four academic vocabulary words were used on average. The maximum academic vocabulary in students' essays was .96.

The academic vocabulary words students used were limited to a small list and students repeatedly used the words on this list. Table 4-2 shows the most frequently used academic vocabulary words in the corpus of essays, with the numbers indicating

the frequency of the word in the corpus of essays. In total, 1392 occurrences of academic vocabulary (including multiple occurrences of the same word and its derivations) were found in the corpus of essays. The 20 words listed above constituted over 75% of the total numbers of academic vocabulary words in the corpus. Multiple occurrences of words such as *culture, cultural, influence, similarity* and *civilization* constitute the majority of the academic vocabulary that students used. These words were also the keywords of the lesson with respect to Roman and Greek culture that repeatedly occurred in teachers' instruction and they were part of the prompt.

Overall, academic vocabulary could be seen in most of the students' historical writing. But the academic vocabulary words used by students were limited to the repeated uses of a small set of words.

Embedded Clause

As Table 4-1 shows, in the corpus of essays, the average use of embedded-clause per non-embedded clause was 0.11 with the standard deviation of 0.06. In other words, approximately one in every ten clauses had an embedded clause.

By examining the use of embedded clauses, we understand how the texts were organized. In some clause structures, clauses were connected one after another, as in the following extract:

> 1a *Their systems of Government and partial equality of women most likely inspired governments like the United States to look to Greek government for ideas*, (Main Clause)
>
> *1b whereas Rome's government was less influential in that respect* (paratactic Clause)
>
> *1c because it was patriarchal, like most ancient, even current nations* (Hypotactic Clause)

In this clause complex, the paratactic clause 1b compared the United States in the hypotactic clause 1a to Roman government and clause 1c explained further about Clause 1b. The main clause was chained with the hypotactic and paratactic clauses, resulting in a complex and lengthy sentence.

Embedded clauses, on the other hand, enabled authors to pack many lexical items in a clause that served as a part of another clause, resulting in a lexically condensed sentence. Among all 84 essays in this study, only four essays did not employ any embedded clause. On average, each essay used at least four embedded clause. Some essays used as many as 12 embedded clauses.

In the corpus of essays, embedded clause occurred in any position in a sentence. It can be a subject, for example:

2 *[All of the things that contributed to their government and culture] have paved the way for influences today.* (Essay 21)

It also occurred in the object position of a sentence, as in:

3 *Army and militaries is [a thing that many mans do]*. (Essay 1)

4 *The rivalry between the communities led to [warfare that devastated Greek society].* (Essay 77)

The embedded clause could be used to modify a prepositional phrase too, for instance:

5 *Unlike people in America they had to do the most out of them for each [the thing we are doing today]*. (Essay 50)

6 *While one made theirs realistic with [stable, wrinkles things that are signs of age and time].* (Essay 44)

Not all embedded clauses had the same functions in student's writing though. In some essays, student writers used embedded clauses to contribute to the textual

meaning through a leading sentence to start comparing and contrasting the Greeks and the Romans, such as "*the thing , the reason , the way* " in the essay, for example:

7 *[The last difference I see] between the Greeks and the Romans is in their trade*. (Essay 42)

8 *[The next reason I am going to talk about] is the influence of religion.* (Essay 9)

When we removed these two embedded clauses, the experiential meanings in these two examples would not change. What changed was the interpersonal meaning because of the removal of "*I*" and a first-person narrative in the text. Please see Example 7a and 8a.

7a *The last difference between the Greeks and the Romans is in their trade.*

8a *The next reason is the influence of religion*.

In many other essays, embedded clause was mostly used to realize experiential meaning and add to the lexical density in the text, for example:

9 *Many other Greeks states remained as a "biligarchy" [(that is) ruled by a few], but in America we have a balanced central government [(that is) composed of three branches: the executive, legislatives, and the other one].* (Essay 34)

By using the embedded clauses *"(that is) ruled by a few*" and "*(that is) composed of three branches: the executive, legislatives, and the other one*", Example 8 integrated information that could have been expressed by two long independent clauses, hence increasing the density of content in the text. The embedded clauses served as definitions of the participants *biligarchy* and *a balance central government,* respectively. They played an important role in both experiential and textual meanings.

Overall, embedded clause was a prevalent feature in the corpus of text. Most participants used it in their writing to contribute to the organizational structure in the text.

The use of embedded clauses reduced the numbers of non-embedded clauses, and therefore resulted in a denser structure and a higher lexical density.

Expanded Noun Phrase

Expanded noun phrase, defined as a noun with post-modifier(s), was the most commonly seen feature in the corpus of text. In all the essays, the average number of expanded noun phrases in each essay was 9.92 and the maximum number was 28 in some essay. The average number of expanded noun phrase per non-embedded clause, on the other hand, was only 0.24 with a SD of 0.13. It means student used one expanded noun phrase every four non-embedded clause. Below a number of examples of expanded noun phrases are provided and analyzed.

In the following two examples, the post-modifiers were nominal structures connected by prepositions, as in the square brackets:

1 *The most diverse things [about the two] were their cultures.* (Essay 56)

2 *Boys [as young as the age of seven] started training.* (Essay 82)

In a text of comparison and argument, it was natural to begin a clause with noun phrases that were modified by an adjective attributive like post-modifiers, as in Example 1 *about the two* modified *the most diverse things,* and Example 2 *as young as the age of seven* was used to modify *boys*. When nouns were placed in the first place with modifications, phenomena and chronology can be categorized, labeled and described effectively with little difficulty.

Sometimes the post-modifiers were nominalizations connected by prepositions. In the two examples below, the post-modifier was represented a prepositional phrase including nominalizations:

3 *But by looking within the two one can see* ***differences and similarities [of equal depth].*** (Essay 43)

In other examples, embedded clauses were used to modify the nouns, for instance:

4 *For part of the time Rome was taken over by* ***a dictator [named Julies Caesar].*** (Essay 84)

5 *They had* ***tragedies and comedies [that flourished Greek entertainment]****.* (Essay 67)

Expanded noun phrases increased the density of lexical items in the text by packing lexical items together. This feature was commonly paired with the use of embedded clause. For example, Example 4) listed above could be rewritten as:

4a *For part of the time Rome was taken over by a dictator (main clause), and the dictator's name is Julies Caesar* (paratactic clause)*.*

Written in this way, the text structure became more intricate and lexical density would be lowered down because the new sentence consisted of two non-embedded clauses and more grammatical items such as *and* and *the*. Using an embedded clause as a post-modifier increased the cohesiveness and tightness of the structure and creates a flow of information. With the use of this post-modifier, the definition of *a dictator* was established within the clause and the readers would be able to focus on main action *taken over* in this historical event, which also represents better cohesion in the academic writing. Together with embedded clauses, expanded noun phrases enabled this sentence to accommodate a great deal of lexical materials and provided a more dense presentation of information.

Overall, we can see that in the corpus expanded noun phrases were frequently used. On average, one expanded noun phrase was used in every four noun-embedded clauses. Expanded noun phrase was used mostly as a subject, object, or in a

prepositional phrases. The use of them contributed to a more tight structure and better cohesiveness in the historical writing.

Nominalization

Nominalization expresses a meaning in nouns that could be naturally used as verbs or adjectives. Among all 84 participants, 20 of them did not use any nominalization in their writing. Some essays used more than 10 nominalizations. In other words, approximately one-fourth of the students did not exhibit any use of nominalization in their writing. There were also students who showed frequent use of this feature. As Table 4-1 shows, in the corpus of essays, the average use of nominalization per non-embedded clause was 0.06 with the standard deviation of 0.06. On average, there were only 6 nominalizations being used in 100 non-embedded clauses.

The nominalizations used by 64 students had different functions. First, students used nominalization to realize abstractness. For example, in the Example 1a:

> *1a A large number of Greeks left where they lived to go to a new place in distant lands, so they could have good farmland and [the growth of trade].* (Essay 44)

The more congruent way of organizing this sentence could be:

> *1b A large number of Greeks left where they lived to go to a new place in distant lands, so they could have good farmland and [the trade could grow].*

In Example 1a, *the growth of trade* became a more general and abstract concept than a concrete narration such as *the trade could grow*. Also, the causality (*Greeks left---the growth of trade)* could be built within one independent clause, which also contributed to an abstract causal connection between two historical events. The former usage is commonly seen in academic writing. The same function can be observed in Example 2:

2 *After the collapse of Mycenaean Civilization, Greece entered a difficult period in which the population declined and food production dropped*. (Essay 83)

Both the use of *the collapse of Mycenaean Civilization* and *food production* increased the abstractness of the text.

Second, the frequent use of nominalization rendered texts more formal and objective. Through nominalization, actions could be realized into entities and the actor and goal as modifiers could be omitted. In some specific situations, the writer was willing to use nominalization to de-emphasize the actor or agent. Other times, the writer did not know whom the actor or agent was, or the writer regarded the event more important than the actor or agent. Please refer to Example 3:

3 *As far as religion goes, both were polytheistic, meaning they believed in* ***the existence of multiple gods.*** *Mythology can be traced in both societies. The Romans borrowed the Greek gods and basically gave them names of their own, but both of their mythological ideas and concepts were along the same lines. However, unlike Greece,* ***the spread of Christianity*** *developed throughout Rome, despite their efforts to abolish the new religion.* (Essay 56)

In this paragraph, the event "*the spread of Christianity*" was more important than who spread it. Since the topic or the theme was the most prominent part to the writer, with nominalizations, the writer took the actor out of the flow of sentence. The reader's attention was less likely to be fixed on the actor (*who spreads Christianity*), but on the event (*the spread of Christianity)* in the subject position.

In addition, the use of nominalization contributed to the textual meaning, the flow of text, and the overall organization. By changing verbal or clausal meaning into a nominal element, nominalization enabled something that had been presented as a

clause to be distilled into a noun phrase. And then this phrase could participate in a chain of reasoning, as in Example 4:

> 4 *All adult males were allowed to vote on issues, thus giving them power over their own fate. In Rome, there was not even partial democracy. Unlike Greece, Rome's Government was less lenient and equal. Woman had many more rights under Greek government (in some parts) than Rome. They had jobs in trade, and in general had a mere equal standing with men than Rome. Their systems of Government and* ***partial equality of women*** *most likely inspired governments like the United States to look to Greek government for ideas, whereas Rome's government was less influential in that respect because it was patriarchal, like most ancient, even current nations.* (Essay 1)

In this example, the use of *"partial equality of women"* distilled the whole comparison regarding women's societal standing in Greece and Rome into a noun phrase. This noun phrase then became the subject of the following clause. It served as the starting point for the argument regarding how this system of inequality influenced the western society, which was the focus of the essay. This use of nominalization could demonstrate that the writer expected the reader to be able to connect with the information that was distilled into the phrases.

Last but not least, in many situations, nominalizations were used to realize causality, as in Example 5 and 6.

> 5 *First, Greek religion is [a huge factor and influential factor] on modern America*. (Essay 78)
>
> 6 *In conclusion you can see the classical Greek have [many affects and influence] on modern Americans*. (Essay 75)

Rather than using *because* or other causal conjunctions, the students used nouns such as *factor, affect,* and *influence* to construe the cause-effect relationship in a more intact and objective form. If a conjunction was used, a clause of cause led by *because* and the other clause must be involved in Example 6. Moreover if the conjunction of *because*

was used, more intricate description must be involved to describe the effects of multiple affects and influences, which would obscure the causality in this sentence.

Across the corpus of essays in the present study, the most common nominalization was *influence.* Students usually used the word of *influence to* start their essay by stating the influences of Greek and Roman cultures. Then they used several paragraphs to describe these influences. The type of idea flow was popular in the corpus of text, through which a cause-effect relationship was built. This causality then led the overall organizational structure, as in the following paragraph:

> 7 *The [long-term influence] also had some alikes and differences. The Romans were influenced by the Greeks and Latins. The Greeks were influenced by the minoiuas. They both had architecture, engineering, literature, and a writing system. The Greeks had more art than the Romans did. The Greeks were influenced in art and politics. They even made more routes to trade good with. The Romans had a road system that was used for trade. They were both influenced in science and astronomy.*

The cause-effect relationship construed by the nominalization of *influence* led the flow of reasoning in this paragraph. In this paragraph, various aspects of these causalities were listed by focusing on *influences*. The causality in different aspects of life including *architecture, engineering, literature, writing system*, and etc. was listed to organize the flow of argument in the whole paragraph.

Overall, nominalization served the function of building abstractness, contributing to objectivity by embedding implicit perspectives, distilling information, and creating the flow of argument. Nevertheless, the feature of nominalization was not prevalent in the corpus of the text. Most students used very few nominalizations in their writing.

Lexical Density

The descriptive analysis suggests that, in the corpus of these historical essays, the average lexical density was 4.86 with the standard deviation of 0.87. It means that in every non-embedded clause, an average of less than five content words or lexical items was used. According to Christie and Derewianka's (2008) study of writing development, the lexical density starts around 3 to 4 in childhood and rises to about 5 by early adolescence. In late adolescents when students are 17 years or older, this can rise to about 6. This lexical density of 4.86 indicated a low density and a low use of content words across the corpus of text (Halliday & Matthiessen, 2004).

Academic Language Features in the Text

Descriptive analysis of the examples of student texts can also demonstrate students' use of academic language features. Below I will discuss all the five features in the context of three essays.

Academic vocabulary

In Essay 1 written by a student in Reading Group 1 (low reading ability group), we can see how academic vocabulary (in bold) was used in students' writing:

> *1*
>
> *A Wow! I didn't know, in 800 B.C., the Greeks had **dramas**. Is that what "today" Americans call Soap Operas? Well, like it or not, but we Americans do new things that ancient people already done. In other terms, the Greeks have influenced modern America in a lot of ways like, Politics, Arts, and Literature. Let's find out how they influenced America.*
>
> *Can you believe that the Greek **Philosopher** Aristotle was the person who favored the **constitutional** government as the best form for most people? Aristotle is the student of the greatest **philosopher** of western **civilization**, Plato. Plato's ideal state was, for **philosophers** to become kings of their countries. But, unlike Plato, Aristotle didn't **seek** an idea state. So, Aristotle at the **constitutions** of 158 states and found 3 good forms of government: monarchy, aristocracy and **constitutional** government. Did you know that?*

*Like I said in the beginning, the Greeks used to have **dramas**. **Dramas** for them were called tragedies. It was called that because they examined such problems as the nature of good & evil, the rights of the **individual**, and etc. Today we use **drama** as Soap Operas. It deals with tragedies sometimes. Then Greek comedy developed after tragedies. Comedy tried to make a point, while making laugh their robes off. So should we laugh now, or cry later?*

For today Americans, literature is the most important. Why? Well, math, reading, science, astronomy, and etc. Greeks were doing that stuff before were even born.

In this essay, although 13 occurrences of 6 academic vocabulary words could be found, the author repeated using word such as *philosopher* and *drama.* In terms of the word choice, the student many times selected the non-academic vocabulary to represent their meaning. For example, the students used words such as *influence* rather than *impact*, or *new* rather than *innovative.* The latter words both belong to Coxhead's academic vocabulary list (2000).

The second essay was from a student from reading group 2, (academic vocabulary words are in bold):

2

*Romans and Greeks are two great people in the past. Their **culture** and government was so alike, but different, the Romans with their everlasting writing and the Greeks with their marvelous statues. The Romans and the Greeks are so alike and they are different.*

The Romans gods were originated from the Greeks. All the gods were exactly the same, but they had different names. They still saw Zeus or Jupiter as the god of the heavens and Hera or Junow was still his wife. A difference is they worshiped different gods as better than other. For the Greeks they disliked Ares or Mars because they hated war, but the Romans loved him because they enjoy war.

Their government was very different. While the Greeks stayed as a democracy the Romans government changed. They went from a Republic to an empire. For the Greeks there was voting among the people. The Romans had people that were elected a position to make the laws and rules.

*Something in their government that was the same was that only men that were citizens of the Empire could vote or be in an election for a position. The **cultures** of both empires influence us today. They both influence people in architect. The Greeks were known for their statues that showed strength and power, but no face expressions. The Romans showed statues that were doing an activity and they did have face expressions. One difference was the Romans Latin language was used more than the Greeks. Today it is used in all the languages and writing.*

That is why the Romans and Greeks are the same, but very different. Even though they share the same gods they worship them different. Also they have a different government system, but the only allowed men to elect. For their influence today they both had statues, but they were shaped different. Also the Romans Latin language has lived on when the Greeks has not.

In Essay 2, only one academic vocabulary word was used and it was used twice. The word *same* was used repeatedly. But unlike its synonym, *similar*, the word of same is not an academic vocabulary word. In another example:

***While** the Greeks stayed as a democracy, the Romans government changed.*

A synonym of *while, whereas,* could be used to express the similar meaning as an academic vocabulary:

***Whereas** the Greeks stayed as a democracy the Romans government changed.*

Based on these examples, we could see that students were able to present certain concepts but many times they failed to use academic vocabulary words to present these concepts.

In Essay 3 (all academic vocabulary words are in bold):

3

*The Romans and Greeks greatly influenced later **civilizations**, even the present day. Their accomplishments, ideas and examples were **revolutionary** and many of them are **incorporated** into modern-day society. These two great empires were powerful, important parts of history. Their governments were predecessors to some of the most influential and*

*successful governments today, like the United States and many others. Three of their most well-known influences on modern **culture** are their religion, government, and the level of equality they had with their empires.*

*Greek and Roman Gods have influenced an unimaginable number of literacy words. **Authors** of thousands of different genres of books have taken inspiration from the Greek and Roman Gods. The Greek Gods were the forefathers of the Roman Gods. They are incredibly **similar** in their powers, **attitudes**, and human-like qualities. The Roman Gods were believed to be a sort-of copycat of the Greek Gods, but **nevertheless** were a great influence on the world. Both the Roman and Greek gods were temperamental, based on common necessities of life and or unexplainable events or forces, and had many Gods and Goddesses. Thus they backed each other up, and strengthened their influence on future peoples. So the Roman and Greek gods had **similar** characteristics, formed for different reasons.*

*Both Greece and Rome were broken up into city-states **polis**. Their forms of governments in this way were quite **similar**. However in some parts of Greece Sparta these were at least a partial democracy. All **adult** males were allowed to vote on **issues**, thus giving them power over their own fate. In Rome, there was not even partial democracy. Unlike Greece Rome's Government was less lenient and equal. Woman had many more rights under Greek government in some parts than Rome. They had **jobs** in trade, and in general had a mere equal standing with men than Rome. Their systems of Government and partial equality of women most likely inspired governments like the United States to look to Greek government for ideas, **whereas** Rome's government was less influential in that respect because it was patriarchal, like most ancient, even current nations.*

*Slaves were imperative to the **survival** and well-being of both Greece and Rome. They allowed Greek people the time to vote, sculpt, and study science, and **philosophy**. They also were one-third of Rome's population and thus were very influential to their wealth and **survival**, providing labor for agriculture etc. Slaves allowed the **creation** of the famous Greek **philosophy**, art, science, government and sculpting which are still used today. Slaves also allowed the Romans to **survive** and prosper, keeping their **civilization** alive, and allowing it to **expand** its power and influence, thus allowing it to have a greater influence on the present day.*

*Greece and Rome were two **major civilizations** from the past whose influences were so great that they **survived** and prospered even the present times. Many other **civilizations** have left their mark on the world through countless means. Each one adds a piece of **culture** and knowledge to our ever-growing supply, and allows us to learn from the past and improve our present.*

In this essay, written by a student whose reading achievement level was 5, 28 occurrences of 18 academic vocabulary words could be seen. Various vocabularies could be found in this essay. Essay 3 demonstrated more occurrences of academic vocabulary words and more diverse use of them, compared to Essay 2 and Essay 1. In Essay 3, we could see a variety of academic vocabulary words such as *creation, issues, expand* rather than the repeated uses of *culture, philosophy* or *similar.*

The categories of academic vocabulary words were different in three essays. In all three essays, many of the academic vocabulary words were general nouns that replaced concrete people or action. For instance, *individual* in Essay 1, *culture* in Essay 2, and *adult* in Essay 3 are all examples of this kind. The use of these academic vocabulary words contributed to the abstraction in the historical writing. Essay 3 also used academic conjunction words such as *nevertheless* and *whereas* while Essay 1 and 2 did not utilize any of these conjunction words. It also suggests a more effective use of academic vocabulary words in Essay 3.

Expanded noun phrase

As for expanded noun phrases, Table 4-3 shows the expanded noun phrase that could be found in these three essays. A student from advanced reading group wrote Essay 3, in which 21 expanded noun phrases were used. Essay 2 used 10 expanded noun phrases, and Essay 1 written by the students from the lowest reading group used only seven of them.

These expanded noun phrases served different functions in the essays. Sometimes, detailed or extensive information was packaged into a single noun that refers to a series of events. For example, the expanded noun phrase *predecessors to some of the most influential and successful governments today* semantically refers to

many events and activities. Through the use of these expanded noun phrases, a series of actions and events were condensed into one element.

Another function of expanded noun phrase was to expand explanations. Expanded noun phrases are used as grammatical participants to substitute real people to act in the historical events. In Example 1:

> 2 *Their systems of Government and **partial equality of women** most likely inspired governments like the United States to look to Greek government for ideas, whereas Rome's government was less influential in that respect because it was patriarchal, like most ancient, even current nations.*

The expanded noun phrase *partial equality of women* did not only expand the explanation but also realized the causal relations in the sentence that the factor of *partial equality of women* caused modern governments to learn from them.

We can also see that in these essays the expanded noun phrases also took the function to structure reasoning and contribute to the flow of information in a text. As we could see in Example 2:

> *2 Slaves allowed the creation of the famous Greek philosophy, art, science, government and sculpting which are still used today.*

The reasoning was structured between *slaves* and *the creation of the famous Greek philosophy, art, science, government and sculpting which are still used today* in a way that the existence of slaves became objective and the actor of slave system was much less prominent.

Effective uses of expanded nouns rely on the realization of these three functions, which we could see in the Essay 3 that was written by a student with relatively higher reading ability. In Essay 1, the student mostly used expanded noun phrases to package information. In Essay 2, the student used some of them to expand explanation such as

the cultures of both empires. The most successful and effective use of expanded noun phrase was Essay 1. The expanded noun phrases made this essay more dense and abstract compared to the first two essays.

Embedded clause

Table 4-4 provides a summary of the analysis of embedded clauses in these three writing samples (embedded clauses are in bracket). In these three essays, embedded clauses were used as the subject, object, and prepositional phrase in clauses units. They all contributed to the experiential meanings. There were only slight differences. According to the analysis, although Essay 3 used fewer embedded clause compared with Essay 2, the Essay 3 exhibited more accurate use of embedded clause. The Essay 2 repeated using *that* rather than *who* for embedded clause that modifies people. The Essay 1 used only two embedded clauses.

In terms of the functions of these embedded clauses, in Essay 3, all three embedded clauses served as a role that enabled the connections and causal relations between different events and actions can be developed within the clause, which significantly contributed to the explanation of causes and consequences in this historical writing. On the contrary, Essay 1 and Essay 2 used embedded clauses more like modifiers to define some nouns.

Overall, through the use of embedded clauses, the objects that they modified were highlighted and emphasized. A less grammatically intricate style (fewer hierarchical levels of clauses were used) and a more lexically condensed style were achieved. Moreover, causal connections and logical connections can be achieved within the clauses through the uses of embedded clause.

Nominalization

The average use of nominalization per non-embedded clause increased dramatically from Reading Group 1's .17 to Reading Group 2's .53. This average use of nominalization was even higher at .61 for Reading Group 3. Table 4-5 shows the descriptive analysis of these three writing samples in detail (the nominalization was in the bracket in the sentence):

We can see a vast distinction in these three essays. In the Essay 3, nominalizations could be found in the subject, object, and prepositional phrases. We could see abstract and technical terms such as *necessity, equality,* and *survival.* We can also see how the student used the nominalization *survival* and then elaborated other aspects to make people survive including *labor for agriculture.* The advanced-reading student relied on nominalization to develop the comparison among Greek, Roman civilization, and modern cultures, whereas Essay 2 used only one nominalization and Essay 1 used none.

As for the functions of nominalization, we can see the important role of nominalization in developing causality in the essays. For example, in sentence 3f, *one-third of Rome's population* caused *their wealth and survival* as abstract and general participants, in which an abstract causal relationship was established. We can also see that the student started to reflect on the significance of cause and consequence in historical events.

Lexical density

The lexical density of Essay 3 was 6.71, while Essay 2's lexical density is 4.07 and the Essay 1 was 4.15. The low lexical density of Essay 2 was mainly due to its

clause combining strategies: relatively simple clauses were used and the percentage of embedded clause was low.

Overall, different academic language features including academic vocabulary, embedded clause, expanded noun phrases, and nominalization can be found across the corpus of essays. On average, these texts exhibited a limited use of academic features and a low lexical density. There are many oral register features in low achieving essays, suggesting that the students were drawing on oral registers, but more successful essays draw more on academic registers.

The discussion regarding these features and the interpretation of them based on theoretical framework and literature review will be elaborated in Chapter 5 of Discussion and Implications.

Research Question II: MANOVA Results

The second research question examined whether academic language use is related to reading ability. The hypothesis one was that the academic language use would not be changed with the change of reading ability. In all the analyses, academic language features were dependent variables and reading ability was the independent variable.

To examine this research question and test the hypothesis, I first tried to find out if variables (general features: academic vocabulary, expanded noun phrases, embedded clause, and nominalization; and lexical density) were correlated to each other. A moderate correlation among the dependent variables further confirmed that a one-way multivariate analysis of variance (MANOVA) should be conducted for all five academic language features.

Correlation

Before MANOVA, correlation was computed to examine the association among dependent variables within each set. This was also to confirm one of the factors why a MANOVA was conducted.

Table 4-6 provides a matrix of the correlation coefficient for the five dependent variables. The relationship between any two of these five dependent variables was investigated using Pearson Product-moment correlation coefficient. All variables were correlated to each other positively. According to the strength of correlation defined by Cohen (1988), Lexical Density has moderate correlation with Nominalization (r=.522) and Academic Vocabulary (r=.559), Expanded noun phrase (r=.496), and Embedded Clause (r=.363). The correlations among dependent variables ranged from .123 to. 475 and suggested the existence of moderate correlations. The moderate correlation among dependent variables further confirmed that a MANOVA was more appropriate statistics for the present study than a number of simple analysis of variance (ANOVAs). The primary reason was: as dependent variables were correlated with each other, the findings from separate ANOVAs would be redundant and difficult to integrate. Meanwhile, the family-wise error rate becomes high; the odds of finding something are significant simply because chance rises with repeated use of the same sample of data.

MANOVA

Inferential statistics were then used to test mean differences for significance through a one-way MANOVA. A post-hoc test of multiple comparisons (Scheffé) was selected based on the results of the Levene's statistic (Coakes & Steed, 2007). The academic language features including academic vocabulary, expanded noun phrase, embedded clause, and nominalization were the dependent variables in my study.

Additionally, I included lexical density as a dependent variable in the overall MANOVA analysis. Although lexical density was believed to have an overarching nature and was related to all academic language use, as other academic features, it represents the similar underlying theoretical construct and represents the lexical items that are used in academic writing. Also for statistical purpose, it was more meaningful to include it in the whole model to control the overall alpha level to some constant (Bray & Maxwell, 1982).

Before conducting MANOVA, its assumptions were tested. The assumptions of MANOVA include univariate and multivariate normality. First, all of the dependent variables must be distributed normally. This was visualized with histograms in SPSS. The Shapiro-Wilk test was used to determine the normality of all dependent variables. Second, any linear combination of the dependent variables must be distributed normally. Pairwise relationships among the dependent variables were checked out for nonlinear relationships using scatter plots and the assumption was confirmed.

MANOVA also requires that the “covariance matrices” be homogeneous. Computations in MANOVA require the use of matrix algebra, and the matrices of the covariances (the variance shared between any two variables) have to be equal across all levels of the independent variable. The hypothesis was that the covariance matrices of the dependent variables are significantly different across levels of the independent variable. This homogeneity assumption was tested and held using Box’s M (Table 4-7) and further explanation was provided with multivariate results (Table 4-8).

Box’s M test (Table 4-7) demonstrates the test was significant (which means that there were significant differences among the reading groups in the covariance matrices). Since high power (.912) was already identified, as in Table 4-8, this result of

significance is not a problem. MANOVA is robust to violations of homogeneity of covariance when groups' sample sizes are equal, as in the current study (Stevens, 1996). However, when Box's test finds that the covariance matrices are significantly different across levels of the independent variables it may indicate an increased possibility of Type I error (Stevens, 1996). So I made a smaller error region and changed my interpretation of the results according to the new significance level of .01.

After all the assumptions were tested, a one-way MANOVA was conducted using SPSS 16.0. The MANOVA results revealed there was a significant multivariate main effect between reading ability and academic language use, Wilks' $\lambda = .761$, $F(14,150) = 2.252$, $p < .01$, partial eta squared = .212. Power to detect the effect was .912. Thus hypothesis 1 (the academic language use did not change with the change of reading ability) was rejected (see Table 4-8). This indicates that there was a significant difference among the three levels of the independent variable.

Since a significant multivariate main effect was obtained for the independent variable, univariate F tests were then conducted to look at each dependent variable in turn to see if the independent variable had a significant impact on them separately. As I was doing five tests here and I would require an experiment-wise alpha rate of .05, I divided it by five to get an acceptable confidence level for each of the five tests, so the alpha level was set to $p < .01$. By that criterion, there was a significant univariate results were between reading ability and lexical density and nominalization. Significant univariate main effects for reading were obtained for lexical density, $F(2, 81) = 5.569$, $p < .005$, partial eta square =.121, power = .843; and nominalization, $F(2, 81) = 7.476$, $p < .001$, partial eta square =.203, power = .935. The results are displayed in Table 4-9:

In order to examine the differences between reading abilities in lexical density and nominalization, considered two at a time, I looked at the results of the Levene's statistic to explore what kind of post-hoc test were appropriate for follow up analysis with respect to the reading ability (Table 4-10).

The Levene's statistics for lexical density that had significant univariate ANOVAs were non-significant, meaning that the group variances were equal, so I could use the Sheffé tests for comparing pairwise group means. The Levene's test for nominalization was significant though. Again, as the MANOVA with same sizes of groups is robust to violation of normality, they were kept in the further analyses (Stevens, 1996).

Since I was doing two significance tests (K (k-1)/2) looking at the pairwise tests comparing the use of academic language features by reading ability, I used the smaller confidence level again to protect against inflated alpha error. I divided the .05 by 2 and set .025 as my error level. By this standard, Table 4-11 shows that for mean scores for lexical density were statistically significantly different between Reading 1 and Reading 3 ($P < .025$) but not for Reading 2 and Reading 3 ($P = .658$) or Reading 1 and Reading 2 ($P = .068$). Mean scores of Nominalization were statistically different between Reading 1 and Reading 2 ($P < .025$) as well as between Reading 1 and Reading 3 ($P < .025$), but not for Reading 2 and Reading 3 ($P = .457$).

To summarize, a one-way MANOVA suggests there was a significant multivariate main effect between overall academic language use and reading ability. Thus the null hypothesis that the academic language use did not change with the change of reading ability was rejected. Although a multivariate main effect was obtained, a significant

univariate main effect could only be found for the features of nominalization and lexical density.

Research Question III: Regression

Research Question III first examined the different uses of the focal academic language features among high-, medium, and low-quality essays, based on the grouping indicated by the holistic scores of the essays. The second part of Research Question III looked at the prediction of academic language features to writing quality. In order to answer the first part of this research question, I first compared different means of academic language features among different groups. Then, I conducted a regression analysis using writing quality as the dependent variable and academic language features as the predictor variables to determine which academic language features were the most predictive of writing quality and account for the largest amount of variance associated with writing quality.

ANOVA

Table 4-12 shows the comparison of means in terms of all five academic language features selected for this study. As it can be seen from the Table 4-12, higher writing quality groups shows more use of all academic language features compared to lower writing quality groups.

ANOVA for the low-proficiency (i.e., scored 1.0-2.5), average-proficiency (i.e., scored 2.6-3.5), and high-proficiency (i.e., scored 3.6-5.0) essays are reported in Table 4-13. The low-, average-, and high-proficiency essays were significantly different in terms of lexical density (the number of content words per non-embedded clause): $F(2, 81)=22.369$, $p<.001$; expanded noun phrase (the number of expanded noun phrase per

non-embedded clause): F (2, 81)=3.954, p＜.05; nominalization (the number of nominalization number per embedded clauses): F (2, 81) =29.397, p＜.001; but not for academic vocabulary (the number of academic vocabulary per non-embedded clause); and embedded clause (the number of embedded-clause per non-embedded clause).

Multiple Regression

A backward stepwise regression analysis was conducted to examine which of the five variables was/were predictive of holistic essay ratings using the continuous score. These five variables were regressed against the holistic evaluations for the 84 evaluated essays.

The backwards-stepwise regression began with an examination of the combined effect of all of the independent variables on the dependent variable. One by one, independent variables were removed, and a new analysis was performed (Table 4-14). The order of removing was lexical density, nominalization, embedded clause, academic vocabulary, and expanded noun phrase. The selection rule was based on the significance of each feature to secondary students implied by the literature in Chapter 2.

Before running the Multiple Regression, the assumptions were checked. The variables were checked for outliers and multicollinearity. The outliers' values demonstrated that there were no independent errors caused by residuals. In SPSS 16.0, I used the Explore command to look at the normality of all the residuals. All of the results from the Explore command suggested that the residuals were normally distributed -- the skewness and kurtosis were near 0, the tests of normality were not significant, the histogram looked normal, and the Q-Q plot looked normal as well. Based

on these results, the residuals from this regression appeared to conform to the assumption of being normally distributed.

Then, independent variables were checked for multicollinearity and the absolute values of Pearson correlation were all less than 0.8, collinearity was unlikely to exist (Field, 2005). Coefficient values demonstrated that the model's data did not suffer from multicollinearity. The "tolerance" was an indication of the percent of variance in the predictor that could not be accounted for by the other predictors, hence very small values indicate that a predictor was redundant, and values that were less than .10 may merit further investigation. As the results showed, the tolerance values were all acceptable (Field, 2005). VIF stands for variance inflation factor, is (1 / tolerance). When a variable's VIF values were greater than 10, it may merit further investigation. All VIF values were a little over 1, the threshold for multicollinearity (Field, 2005), but much smaller than 10, which suggest that multicollinearity was not violated in my study.

The regression analysis (see Table 4-15) shows that the indices of nominalization, lexical density and academic vocabulary had statistically significant effect on essay ratings, $F(7, 46) = 10.54$, $p < .001$, $r = .69$, $R^2 = .56$, adjusted $R^2 = .55$. Thus, the three indices combined (nominalization, academic vocabulary, and lexical density) accounted for 56% of the variance in the evaluation of the 84 essays examined. Among three predictors, nominalization accounted for 43.1% of the variance in writing quality controlling for other factors. Lexical density accounted for 10.4% of the variance and academic vocabulary accounted 2.9% of the variance controlling for other factors.

Overall, the statistical results reveal that essays of different writing qualities used academic language features in different ways. Higher-quality essays used significantly

more nominalization and academic vocabulary and they also displayed higher lexical density. We could not detect significant differences in using the features of expanded noun phrase and embedded clause though. Among all the five independent variables, three factors of writing quality were found: nominalization, lexical density, and academic vocabulary. Nominalization accounts for 43.1% of the variance in writing quality, lexical density accounts for 10.4% of the variance and academic vocabulary accounts 2.9% of the variance controlling for other factors.

To sum up, the results of the descriptive statistical analysis addressed the three research questions. First of all, analysis indicates that the use of five target academic language features could be seen across the entire sample. The most commonly seen features were academic vocabulary word and expanded noun phrase. Embedded clauses could be seen in students' writing as well. Nominalization was the least commonly seen feature in the writing samples. The average lexical density in the writing samples was relatively low. The functions of these features varied in students' writing.

For the second research question, higher reading groups used more academic language features including nominalization and lexical density. A one-way MANOVA suggested that there was a significant multivariate main effect between reading ability, which means students with different reading abilities used academic language features differently. Compared to students with lower reading abilities, students of higher reading abilities used significantly more nominalizations and showed higher lexical density in their writing.

For the third research question, compared to lower-quality essays, higher-quality essays used significantly more academic language features including expanded noun

phrase, nominalization, and lexical density. The regression analysis shows that the indices of nominalization, lexical density and academic vocabulary significantly predicted writing quality. The finding revealed a significant impact of academic language features including nominalization, lexical density, and academic vocabulary on writing quality. The three indices combined (nominalization, academic vocabulary, and lexical density) account for 56% of the variance in the writing quality of the 84 essays examined. Among these three features, nominalization could predict most of the variances in writing quality. Whereas the nominalization and lexical density had positive impact on writing quality, the presence of academic vocabulary seemed decreasing the essay quality. For every unit increased in academic vocabulary, we expected a -1.124 unit decrease in the writing score, holding all other variables constant.

In Chapter 5, these findings will be contextualized, discussed, and interpreted with the research questions and reviewed literature regarding academic language in secondary schools.

Table 4-1. Descriptive statistics

Variable	N	Minimum	Maximum	Mean	Std. deviation
Academic vocabulary	84	.00	.96	.412	.198
Embedded clause	84	.00	.27	.106	.058
Expanded noun phrase	84	.05	.57	.241	.125
Nominalization	84	.00	.25	.062	.058
Lexical density	84	3.25	8.00	4.863	.873
Valid N (listwise)	84				

Table 4-2. Frequent word and their occurrence frequency

Academic vocabulary word.	Frequency of occurrence
affect	14
aspect	10
civilization	49
collapse	5
culture/cultural	240
decline	2
despite	3
drama	52
establish	11
impact	17
influence	177
isolate	3
major	24
military	38
participate	8
philosophy/philosopher	45
period	9
similar/similarity	188
somewhat	8
unique	4

Table 4-3. Expanded noun phrase analysis

Essay	Expanded noun phrases
1)	*1a. new things that ancient people already done,* *1b. the person who favored the constitutional government as the best form for most people,* *1c. the student of the greatest philosopher of western civilization,* *1d. kings of their countries,* *1e. the constitutions of 158 states,* *1f. the nature of good & evil,* *1g. the rights of the individual,*
2)	*2a. two great people in the past* *2b. the god of the heavens* *2c. voting among the people* *2d.* people that were elected a position to make the laws and rules *2e. Something in their government that was the same* *2f. men that were citizens of the Empire* *2g. an election for a position* *2h. The cultures of both empires* *2i. people in architect* *2j. statues that were doing an activity*
3)	*3a. predecessors to some of the most influential and successful governments today,* *3b. Three of their most well-known influences on modern culture,* *3c. the level of equality they had with their empires,* *3d. Authors of thousands of different genres of books,* *3e. inspiration from the Greek and Roman Gods,* *3f. the forefathers of the Roman Gods,* *3g. a sort of copycat of the Greek Gods,* *3h. a great influence on the world,* *3i. common necessities of life,* *3j. their influence on future peoples,* *3k. power over their own fate,* *3l. jobs in trade,* *3m. a mere equal standing with men,* *3n. Their systems of Government,* *3o. partial equality of women,* *3p. well-being of both Greece and Rome,* *3q. labor for agriculture,* *3r. the creation of the famous Greek philosophy, art, science, government and sculpting which are still used today,* *3s. a greater influence on the present day,* *3t. two major civilizations from the past whose influences were so great that they survived and prospered even the present times,*

3u. their mark on the world

Table 4-4. Embedded clause analysis

Essay	Reading Group	Embedded clause
1	1	*1a. Well, like it or not, but we Americans do new things [that ancient people already done].*
		1b. Can you believe that the Greek Philosopher Aristotle was the person [who favored the constitutional government as the best form for most people]?
2	2	*2a. The Romans had people [that were elected a position to make the laws and rules].*
		2b. Something in their government [that was the same] was that
		2c. only men [that were citizens of the Empire] could vote or be in an election for a position.
		2d. The Greeks were known for their statues [that showed strength and power, but no face expressions].
		2e. The Romans showed statues [that were doing an activity].
3	3	*3a. Three of their most well-known influences on modern culture are their religion, government, and the level of equality [they had with their empires].*
		3b. Slaves allowed the creation of the famous Greek philosophy, art, science, government and sculpting [which are still used today].
		3c. Greece and Rome were two major civilizations from the past [whose influences were so great that they survived].

Table 4-5. Nominalization analysis

Essay	Reading group.	Nominalization
1	1	*N.A.*
2	2	*2a. Their culture and government/ was so alike, but different, the Romans with [their everlasting writing].*
3	3	*3a. [Their accomplishments], ideas and examples were revolutionary and many of them are incorporated into modern-day society.*
		3b. Three of their most well-known [influences] on modern culture are their religion, government, and [the level of equality they had with their empires]
		3c. Both the Roman and Greek gods were temperamental, based on [common necessities of life] and or unexplainable events or forces, and had many Gods and Goddesses.
		3d. Their systems of Government and [partial equality of women] most likely inspired governments like the United States to look to Greek government for ideas, whereas Rome's government was less influential in that respect because it was patriarchal, like most ancient, even current nations.
		3e. Slaves were imperative to the [survival] and well being of both Greece and Rome.
		3f. They also were one-third of Rome's population and thus was very influential to [their wealth and survival], providing labor for agriculture etc.

Table 4-6. Correlation analysis

	Academic vocabulary	Lexical density	Expanded nouns	Nominalization	Embedded clause
Academic vocabulary	1	.559**	.475**	.255*	.203
Lexical density	.559**	1	.496**	.522**	.363**
Expanded noun phrases	.475**	.496**	1	.260*	.471**
Nominalization	.255*	.522**	.260*	1	.123
Embedded clause	.203	.363**	.471**	.123	1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 4-7. Box's test of equality of covariance

Box's M	61.532
F	1.868
df1	30
df2	20648.806
Sig.	.003

Table 4-8. Multivariate tests

Effect		Value	F	Error df	Sig.	Observed power[b]
Intercept	Pillai's Trace	.977	645.999[a]	77.000	.000	1.000
	Wilks' Lambda	.023	645.999[a]	77.000	.000	1.000
	Hotelling's Trace	41.948	645.999[a]	77.000	.000	1.000
	Roy's Largest Root	41.948	645.999[a]	77.000	.000	1.000
READING	Pillai's Trace	.249	2.216	156.000	.019	.906
	Wilks' Lambda	.761	2.252[a]	154.000	.018	.912
	Hotelling's Trace	.301	2.286	152.000	.016	.916
	Roy's Largest Root	.248	3.875[c]	78.000	.003	.928

a. Exact statistic

b. Computed using alpha = .05

c. The statistic is an upper bound on F that yields a lower bound on the significance level.

d. Design: Intercept + READING

Table 4-9. Tests of between-subjects effects

Source	Dependent variable	Type III sum of squares	df	Mean square	F	Sig.	Observed power[b]
Reading	Academic vocabulary	.139	2	.069	1.799	.172	.366
	Expanded noun	.039	2	.020	1.269	.287	.268
	Embedded clause	.001	2	.001	.169	.844	.075
	Nominalization	.030	2	.015	7.476	.001	.935
	Lexical density	7.650	2	3.825	5.569	.005	.843

a. R Squared = .043 (Adjusted R Squared = .019)

b. Computed using alpha = .05

c. R Squared = .030 (Adjusted R Squared = .006)

d. R Squared = .004 (Adjusted R Squared = -.020)

e. R Squared = .156 (Adjusted R Squared = .135)

f. R Squared = .121 (Adjusted R Squared = .099)

Table 4-10. Levene's test of equality of error variances

	F	df1	df2	Sig.
Academic vocabulary	.878	2	81	.420
Expanded noun	.433	2	81	.650
Embedded clause	.580	2	81	.562
Nominalization	6.576	2	81	.002
Lexical density	.189	2	81	.829

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + READING

Table 4-11. Multiple comparisons (Scheffe)

Dependent variable	Reading	Reading	Mean difference (I-J)	Std. error	Sig.
Lexical density	1	2	-.522	.222	.068
		3	-.724*	.224	.007
	2	1	.522	.222	.068
		3	-.202	.220	.658
	3	1	.724*	.224	.007
		2	.202	.220	.658
Nominalization	1	2	-.045*	.014	.008
		3	-.063*	.014	.000
	2	1	.045*	.014	.008
		3	-.018	.014	.457
	3	1	.063*	.014	.000
		2	.018	.014	.457

Based on observed means.
The error term is Mean Square(Error) = .003.

*. The mean difference is significant at the .05 level.

Table 4-12. Compare means of five academic language features

Writing		Academic vocabulary	Lexical density	Expanded noun phrase	Nominalization	Embedded clause
1	Mean	.378	4.260	.191	.025	.093
	N=28					
2	Mean	.406	4.816	.255	.035	.103
	N=29					
3	Mean	.454	5.538	.279	.074	.121
	N=27					
Total	Mean	.412	4.863	.241	.044	.106
	N=84					

Table 4-13. ANOVA

Dependent variable		Sum of squares	*df*	Mean square	*F*	Sig.
Academic vocabulary	Between Groups	.082	2	.041	1.041	.358
	Within Groups	3.179	81	.039		
	Total	3.261	83			
Lexical density	Between Groups	22.517	2	11.259	22.369	.000
	Within Groups	40.769	81	.503		
	Total	63.287	83			
Expanded noun	Between Groups	.116	2	.058	3.954	.023
	Within Groups	1.183	81	.015		
	Total	1.299	83			
Embedded clause	Between Groups	.010	2	.005	1.554	.218
	Within Groups	.271	81	.003		
	Total	.282	83			
Nominalization	Between Groups	.119	2	.060	29.397	.000
	Within Groups	.165	81	.002		
	Total	.284	83			

Table 4-14. Variables entered/removed

Model	Variables entered	Variables removed	Method
1	Nominalization	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	Density	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
3	Vocabulary	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

Table 4-15. Model summary

Model	R	R square	Adjusted R square	Change Statistics				
				R square change	F change	df1	df2	Sig. F Change
1	.657[a]	.431	.424	.431	62.133	1	82	.000
2	.732[b]	.535	.524	.104	18.192	1	81	.000
3	.751[c]	.564	.548	.029	5.258	1	80	.024

a. Predictors: (Constant), Nominalization

b. Predictors: (Constant), Nominalization, Density

CHAPTER 5
DISCUSSION AND CONCLUSION

Based on the linguistic analysis and statistical findings presented in Chapter 4, Chapter 5 presents discussions of findings and these discussions are contextualized in the previous literature review. Implications of future research and practice will also be considered.

Discussion of Findings

Adolescents' Use of Academic Language

The statistical findings in Chapter 4 suggest that the ninth graders made limited use of academic language in their historical writing. In this section, findings for each academic language feature are discussed in light of the data collection context and the previous research literature.

Academic vocabulary

For academic vocabulary, the student participants used academic vocabulary infrequently. In order to understand this low occurrence of academic vocabulary, it is important to understand how academic vocabulary is conceptualized in terms of tiers or categories. As discussed in Chapter 2, a commonly accepted classification system frames academic vocabulary according to three tiers (Beck, et al., 2002; Calderón et al., 2005): non-academic, conversational vocabulary (Tier 1); general academic words (Tier 2); and content-specific, technical vocabulary (Tier 3). Tier 2 words, or general vocabulary, are considered the most important to teach (Snow, 2008). As mentioned earlier, the Academic Word List compiled by Coxhead (2000) consists of 570 word families that occur reasonably frequently over a very wide range of academic texts, which is the Tier 2 academic vocabulary. In the corpus of essays, students utilized

many non-academic, conversational vocabulary words rather than general academic words, which resulted in a more interactional registers rather than formal academic registers.

In the corpus of essays, the limited use of academic vocabulary not only showed in the actual number of academic vocabulary words, but also the repeated use of certain academic vocabulary words. The results revealed that students used a number of academic vocabulary words repeatedly. Words such as *influence* can be seen almost in every essay, which was a result of instruction regarding the content in this academic writing. The ability to use a diverse selection of academic vocabulary words is a very important factor of academic writing quality (McNamara et al., 2010). The students in the present study did not exhibit sufficient abilities in this regard.

Secondary students usually have the underlying conceptual understanding of what these words present but lack the knowledge and ability to select the most precise word to represent the concepts they already know (McNamara et al., 2010). The relatively low use of general academic words in the current study corresponds to Snow (2008) who advocates more teaching of Tier 2 general academic vocabulary. These findings clearly confirm the challenge of Tier 2 academic vocabulary to students and indicate a need for more attention to these words in content area literacy instruction.

Expanded noun phrase

In the corpus of essays, the feature of expanded noun phrase was prevalent and all students used it in their writing. Research has pointed out that, in academic register, expanded noun phrases are frequently used especially in high quality writing. In Fang's (2008b) analysis of science writing, complex nouns constitute approximately half of all the nouns in high quality essays. Secondary students used more expanded noun

phrases compared to students of lower grade levels (Fang, 2008b). In my study, since students were 9th graders, it is not surprising to see the frequent use of expanded noun phrases in their academic writing. According to the study conducted by de Oliveira (2010), expanded nouns are used to package information, expand explanations, and structure reasoning in textbooks. We can see many examples of expanded nouns that served as these functions in the corpus of essays.

Since we do not have a reference group to compare the average use of expanded noun phrases, it is more interesting and meaningful to see the distinct use of this feature by different reading groups, which will be discussed in the upcoming section that addresses the second research question.

Embedded clause

Embedded clause plays an important role in academic language. It could constitute and reflect the structure of the text (Schleppegrell & Colombi, 1996). In historical writing, the use of embedded clause can build causality within the clauses and contribute to the abstraction (Christie & Derewianka, 2008). In the corpus of essays, we could see students used the feature of embedded clause frequently. Almost every student used this feature in their historical writing. Students used this feature in their writing to realize experiential, interpersonal, and textual meanings. Embedded clause was deployed to construct complex nominal phrases, dense sentence structures and a well-planned and tightly constructed essay.

For adolescents, the use of embedded clause is an especially important feature in their historical writing. Colombi (2002) studied bilingual students' Spanish writing and her finding reveals that students used more embedded clauses when their writing was developed toward more academic styles. She also stated the use of embedded clauses

is crucial to differences between interactional register and academic register (Colombi, 2002). In spoken language, clauses are used and chained one after another, often resulting in very long sentences. Academic language, on the other hand, packs a large number of lexical items in one clause, resulting in more uses of embedded clauses. Christie and Derewianka (2008) analyzed adolescents' historical writing and suggest that, at this stage, students started having less grammatically intricate structure, which means less hierarchical levels of clauses and more embedded clauses are used. The findings in this study confirmed the dynamic developmental nature in using the feature of embedded clauses in adolescents' historical writing. Whereas many students used embedded clauses to construct a well-planned and tightly constructed essay, some other students used more of other clauses such as hypotactic and paratactic clauses and more dependent structure in their writing. The former is more prone to the characteristic of successful historical writing at late adolescence, while the latter shows the feature of early adolescents' historical writing (Christie & Derewianka, 2008).

What was missing in the previous literature was the use of embedded clauses to realize interpersonal and textual meanings. In this study, as described in Chapter 4, more than 10 students used embedded clauses as a tool to construe textual and interpersonal meaning such as "*the next thing I am going to describe*" or "*the reason you may know.*" Embedded clauses of this kind are usually seen in interactional registers. In the corpus of essays, they actually realized an interactional style as if there was an immediate audience, which contributed to both the grammatical intricacy and lexical complexity (by adding more non-embedded clauses and meaning that was irrelevant to the focus in the sentences) but not academic-ness of language in academic

writing. This use of embedded clauses suggests that students still drew on the asset of oral language to construe a more interactional style in their academic writing.

For adolescent writers, one of the most important functions of embedded clause in historical writing is to build connections within clauses through abstraction (Christie & Derewianka, 2008). In this way, the clause structure is grammatically simple but logical relations can be even more intricate. However, the embedded clause is always used to realize this function in adolescents' essays, which must be noticed when we analyze the role of embedded clauses in academic writing.

Nominalization

As the examples in Chapter 4 show, students used nominalizations to build general participants to replace actual events and actions. On the basis of this, definition, categorization, and comparison can be developed. Students also utilized nominalization to distill information, build embedded perspective, and create the flow of the text. In the present corpus of essays, nominalizations were used to construct density of information, abstractness and causality. Students commonly packed series of events into a single noun or a noun phrase as the starting point of a clause, which contributed to the flow of the text. In this way, further explanation could be created and reasoning could be structured. These findings support the role of nominalization in academic language. As the literature suggests (Christie & Derewianka, 2008; Eggins, 2004; Schleppgegrell, 2004), nominalization is the key resource of grammatical abstractness and specialized knowledge in secondary content areas.

On average, only six nominalizations were used per 100 clauses in the corpus of essays, which was the lowest use among all academic language features in the present study. Nominalization was used much more infrequently than other academic language

features such as expanded noun phrase in students' essays. In the previous subsection, we could see that all students used expanded noun phrases in their writing, suggesting expanded noun phrase was a relatively familiar academic language feature for these secondary students. To the contrary, nominalization was a much more challenging feature to the adolescents and not all of them were adept in using it. Students actually exhibited very distinct abilities in using this feature. Whereas one fourth of the students did not use any nominalization in their writing, about one fourth of the students used more than 10 nominalizations accurately in their historical writing.

The limited uses of nominalization in the current students correspond to the existing literature that states nominalization is an important but challenging feature for adolescents (Christie & Derewianka, 2008). Nominalization is regarded as the most important feature of students' academic writing development from an interactional style to academic registers (Colombi, 2002). The feature of nominalization signals the onset of adolescence in literacy development (Christie & Derewianka, 2008). In the analysis of historical writing by Christie and Derewianka (2008), students at mid adolescence (13-15 years) start producing abstract nominalizations. At late adolescence (16-18 years), students utilize nominalization more and more as participants and circumstances to contribute to abstraction in their writing. As we may see in the writing samples, there were students who used nominalization successfully in their historical writing to construct causal accounts of events and build interpretations and arguments based on historical events and artifacts, whereas some other students did not use this feature at all. If we look at this phenomenon from a developmental perspective, ninth grade is a

stage where students learn to use the feature precisely in their writing. This may explain the internal diversity of using the feature of nominalization in the corpus of essays.

As students advance through the grades, they are expected to use nominalizations in their writing to demonstrate that they understand the more abstract concepts in these subjects and also express the concepts in non-congruent language with abstraction, generalization, judgments and opinions. The challenging nature of nominalization best represents the demands of increasingly technical and abstract historical language in high school when many struggling learners are left behind (Christie & Derewianka, 2008). Due to its challenging nature, the scarcity of nominalization in the corpus of essays is understandable, which also calls for more attention to this feature.

Lexical density

The lexical density suggests the use of lexical items and grammatical items. Lexical items are the content words including nouns, adjectives, verbs, and some adverbs (Halliday, 1985). The grammatical items include articles such as *the* and *a*, propositions such as *in* and *on*, pronouns such as *him*, auxiliary verbs such as ***had conducted***, conjunctions *and*, and demonstratives *this*. In conversation, we use fewer lexical items and more grammatical items. But in academic writing, more lexical items must be included because we need to express the meaning through the language itself (Christie & Derewianka, 2008). Overall, students in the present study used a relatively low rate of lexical items. Many students frequently included pronouns and demonstratives rather than general nouns, which not only resulted in an interactional register, but also lowered down the lexical density.

Halliday (1985) points out that written language has a higher lexical density than speaking and lexical density accounts for modality differences (between oral and written language) and developmental differences (between younger writers and older writers). According to Halliday and Matthiessen (2004), most academic writing in subject areas demonstrates lexical density values of six or higher. In the present study, an average lexical density at 4.86 was found in the corpus of essays. The highest lexical density was 8, whereas the lowest one was 3.25. A lexical density at 8 was a high value of lexical density and typical of academic writing. And a density at 3.25 represents interactional styles. On average, the lexical density of 4.86 was not a high value of lexical density and indicated students' academic writing did not distinguish itself quite well from modes of non-academic genres or interactional register.

It is even more interesting to compare the average lexical density in the present study with another analysis of adolescents' historical writing (Christie & Derewianka, 2008). In their study, the lexical density in the genres of explaining and arguing exhibit a movement from 5 to between 6 and 7. This further confirmed the low use of lexical items in the present corpus of essays.

Through the analysis of academic language features and their functions, we can see students used all features in their writing. Not all the features served successfully the functions of academic register though. Sometimes, students used features that construed interactional styles. It must be noted that all the analysis took place in the context of historical writing. Students used the academic language features to realize a style that was valued in conveying historical meanings. For example, it was highly valued in historical writing that students used nominalization to construe causality within

the clause. Therefore, nominalization is a prominent feature for adolescents in history class. This acknowledgement of context is even more important when we discuss the connection between academic language use and reading and writing abilities.

Academic Language Features and Reading Abilities

A significant multivariate effect was found between reading ability and academic language features. Among all the features, there was significant main effects between nominalization and lexical density and reading ability. No significant univariate effect was found for other academic language features including expanded noun phrase, embedded clause, and academic vocabulary.

We usually assume that better readers have better command of academic language features. The findings in my study confirmed this assumption partially and suggested overall better readers significantly used academic language features in their writing. This corresponds to the descriptive analyses of three essays in Chapter 4. Better readers such as the student who wrote Essay 3 exhibited more frequent, diverse, and precise uses of academic vocabulary words, more expanded noun phrases and more accurate use of embedded clauses that contribute to the experiential meaning in their writing. Lexical density indicates to the number of lexical items and a great extent the academic-ness of any essay. Better readers' essays exhibited higher lexical density, which also confirmed their overall better command of academic language.

Better readers in the secondary school setting in the present study employed more nominalizations and their essays exhibited higher lexical densities. Compared to other features, nominalization is a feature characteristic of adolescent literacy development (Christie & Derewianka, 2008). At this point of ninth grade, students' abilities of using nominalization to construct academic-ness in their writing diversify.

Better readers are more motivated to read and have more reading experience in expository text, which provide them with more knowledge of academic language and higher proficiency in using challenging features of disciplinary learning such as nominalization. Therefore, they are expected to show better uses of nominalization in their writing, as in the present study.

In terms of academic vocabulary, better readers are assumed to possess content knowledge and thus more academic vocabulary. They would be assumed to possess more diverse range of words, greater working memory capacity or greater skill and knowledge that facilitates them in retrieving their academic vocabulary during writing (Just & Carpenter, 1992; Raynor & Pollatsek, 1994). Greater use of academic vocabulary in speech or writing is commonly thought to reflect reading abilities, linguistic skills, or even a speaker's socioeconomic status (McNamara et al., 2010). Therefore, the use of academic vocabulary would be significantly different across different reading groups. However, an non-significant relationship between academic vocabulary use and reading ability suggests that students of higher reading abilities did not necessarily use more academic vocabulary compared with students of lower reading abilities.

A possible explanation is that academic vocabulary words of Tier 2 do not differ according to reading abilities. For this group of adolescents, their command of Tier 2 academic vocabulary was similarly low and, therefore, did not show significant differences among different reading groups. In content areas, secondary students usually understand the conceptualization that academic vocabulary presents but are unable to find an appropriate word to represent it. This explanation again corresponds to Snow's (2008) argument about the needs of teaching Tier 2 academic vocabulary.

Another explanation is, because the list of academic vocabulary words used by these students was so confined, it was not a valid representation of students' reading abilities. As we could see, 75% of the occurrences of academic vocabulary used by the students were limited to repeated uses of 20 words. These words were the focus of the lessons regarding Roman and Greek culture content that students were learning in their world history classes. Through these uses of academic vocabulary, we could hardly understand the role of reading abilities in this phenomenon. It implied that most students immediately applied the words that they learned rather than employing their knowledge of academic vocabulary to construct a well-written historical essay. Most importantly, this insignificant relationship points to the unreliability of equating developing academic vocabulary (especially Tier 2) with developing reading and writing in academic language. Since lower reading groups do not necessarily show more limited vocabulary knowledge, the reciprocal relationship between reading ability and academic vocabulary must be examined with scrutiny.

For the feature of embedded clause, students of high reading abilities used even fewer embedded clauses compared with their peers of average reading abilities. The analysis of embedded clauses in the corpus of texts shed light on this insignificant main effect between reading ability and the number of embedded clauses. Whereas embedded clause is an important feature of academic language (Colombi, 2002), the finding in my study demonstrated that most of these secondary students accumulated a great deal of experience with embedded clauses. The functions of these embedded clauses should actually merit more attention. In academic writing, students must know how to use embedded clause to create lexically condense clauses and concisely

describe and define concepts. When embedded clause was used to contribute to the textual meaning and realize oral register, it should not be counted as a feature of academic language.

In my study, the capabilities of using expanded noun phrase phrases in academic writing did not show close connection to students' reading abilities. Neither did students' use of expanded noun phrase phrases differed significantly across different reading groups. Although there was no significant connection, it does not mean that expanded noun phrase is not an important feature in academic language. An explanation of the insignificant association between expanded noun phrase and reading ability is that this group of high school students was already familiar with the use of expanded noun phrases. Therefore, even the low reading groups could employ the features relatively successfully. It must be noted that the high reading group used more expanded noun phrases compared with the average reading group, and the average reading group also used more expanded noun phrases than the low reading group, although these differences were not statistically significant.

Academic Language Features and Writing Qualities

The finding in Chapter 4 clearly demonstrates that, significantly more use of nominalization and expanded noun phrase could be found in essays of higher qualities, compared to lower-quality essays. The finding also showed that higher-quality essays had significantly higher lexical densities and the lexical densities significantly had a significant impact on the quality of the essays.

The feature that plays the most predictive role in writing quality was nominalization. The use of nominalizations predicted significantly over 40% of the variances in essay qualities in the present study. The finding regarding nominalization

corresponds to the previous research that the use of nominalization is a key feature of historical writing (Coffin, 2006a). The frequent occurrences of nominalization increased the lexical density by reducing the number of non-embedded clauses, thus contributing to the high quality in essay writing. The use of nominalization also packed more information in fewer clauses, which resulted in an intact structure in the academic writing.

Because of the important role of nominalization in predicting an abstract and formal writing style, Coffin (2006b) argues that nominalization is a dominant feature in the arguing and explaining genres in history writing. From the discourse analysis in my study, we could also see that a high-quality essay employed many nominalizations and these nominalizations played an essential role in the abstractness and infused perspective, which are highly valued by historians and the language of history.

The important role of nominalization in predicting writing quality also confirmed with the previous literature stating that nominalization is one of the most important indicators of a more formal and abstract writing style (Christie, 2002; Christie & Derewianka, 2008). Nominalization can achieve linguistic complexity, abstraction and technicality in academic writing, which is also characteristic of secondary academic learning. In the context of historical writing, nominalization realized causality in a subtle and implicit way. By using nominalization, students managed to represent a series of events and cause-effect relationship occurs within clauses rather than using conjunctions such as *because* to represent causality across clauses. Both this implicit causality and intact structure contributed to a formal and abstract writing style and a higher writing quality.

This analysis of nominalization suggests the uniqueness of historical discourse. Based on Coffin (2006b), in historical discourse, language features are used to construe causality in an abstract way in academic reading and writing. Successful writing in an expository text must demonstrate effective use of nominalization and abstract causality.

Lexical density, as a fundamental feature of the text organization and syntactic structure, was considered to have close connection with writing qualities as well. It accounted for 10% of the variances in writing qualities. This kind of connection between writing quality and lexical density was primarily based on the dense organization of lexical items in students' writing. As McNamara et al. (2010) stated, proficient writers are assumed to have the ability to write more complex sentences because proficient writer may have either greater working memory capacity or more knowledge of syntactic structures. Thus, proficient writers would be expected to have the capacity to write in more complex or sophisticated language, resulting in high lexical density. They are expected use more embedded clauses, resulting in fewer noun-embedded clauses and higher lexical density.

Lexical density is also a result of multiple features and functions including academic vocabulary, embedded clauses, expanded noun phrases, and nominalization. Embedded clause cannot explain fully the complexity and, furthermore, quality of the essays, as discussed before. However, lexical density can significantly impact essay quality because lexical density takes into account the content words in the computation, and also accounts for the quality of embedded clauses. Because embedded clauses that contribute to the experiential meaning comprise more content words than those that construe textual or interpersonal meanings, high lexical density can be found in

academic writing in which language is more complex and sophisticated lexical items are tightly packed.

On the other hand, the impact of lexical density on writing quality was much lower compared to the feature of nominalization. If we want the lexical density to have a more significant impact on essay quality, it is critical to consider lexical richness (the range of students' vocabulary use) on the basis of lexical density. Recent studies (e.g., McNamara et al., 2010; Johansson, 2008) examined lexical diversity in their measurement of lexical development. Johansson (2008) concludes that lexical diversity accounts for more grade level differences and is a better measure to use for detecting differences between age and grade levels when the richness of lexical items (content words) are also considered. This also connects to the feature of academic vocabulary. Although academic vocabulary predicted little writing quality in the corpus, the results could be changed if we examined the richness and diversity of academic vocabulary instead, which will be elaborated later.

In terms of academic vocabulary, there was no significant difference in using academic vocabulary for three writing quality groups. However, according to the results of multiple regression statistics, academic vocabulary had significant impact over the variances of essay quality but it only predicted 2% of the differences. By comparing the magnitude of the coefficients, we can see the effect of academic vocabulary in predicting essay quality was only lower than lexical density and nominalization but higher than all other variables (-.262). However, the presence of academic vocabulary seemed decreasing the essay quality.

The finding suggests that a simple count of academic vocabulary occurrences has little to do with writing quality. Other features such as the diversity of academic vocabulary may be more important. The study of McNamara et al. (2010) examined the relationship between writing quality and linguistic indices including the diversity of words used by the student authors. In their findings, lexical diversity show significant differences as a function of essay quality, or in other words, the greater lexical diversity, the higher the essay quality. Essay quality was judged largely by the sophistication of the writing including more complex sentences, less frequent words, and a greater diversity of words. In the current study, over 75% of the occurrences of academic vocabulary words used by student writers were limited to the repeated uses of a list of twenty words. More repeated uses of certain academic vocabulary words implied more frequent words and a lower diversity of words, thus resulting in lower essay qualities.

Statistical findings in my study did not show a significant effect for the feature of embedded clause, although Colombi (2002) and Schleppegrell and Colombi (1997) both found the connection between the use of embedded clause and writing qualities in their case studies. As we discussed in the literature review, a well-developed academic writing relies on the use of embedded clauses to achieve grammatical condensation, whereas a more emergent organizational structure needs more extension and elaboration of ideas. An interactional register usually uses more paratactic and hypotactic clauses. Studies demonstrate that when students develop their academic language, their writing moves from more oral to more written styles that are characterized by reduced clausal structures (e.g., Colombi, 2002; Crowhust, 1990; Menyuk, 1988) and fewer parataxis and hypotaxis (Colombi, 2002). Clauses combining

strategies and the use of embedded clauses have been used as one of the most important indicators by researchers when exploring students development trend of academic literacy (e.g., Colombi, 2002).

The use of embedded clause could not predict writing quality in the present study. As we saw in the last subsection, when examining the connection between students' use of embedded clauses and reading ability, no significant difference was found either. To explain this phenomenon, we must consider that students' use of embedded clauses plays different roles in their writing. In the corpus of the essays, many students used the embedded clauses to realize textual and interpersonal meaning such as *the reason I think*. This type of embedded clause did not contribute to a chain of reasoning or a condense structure. Since the study of Schleppegrell and Colombi (1997) did not list any embedded clause of this kind, it's understandable that they found the connection between the use of embedded clause and the academic-ness of students' writing. The finding in this study suggests that when we use embedded clause as a characteristic of academic language development, we must also examine the meanings that these embedded clauses construct and the functions they realize.

Another feature that was irrelevant to writing quality was expanded noun phrases. Previous literature has found high quality texts use more complex nouns than low quality texts and that more complex nouns are used in texts of higher-grade levels than those in texts of lower grade levels (Fang, 2008b). But that's in the context of science writing and the definition of complex noun was slightly different from the definition of expanded noun phrase in my study. My study may offer more insights into the role of expanded noun phrases in writing quality in the context of ninth grade history

classrooms. Most of the ninth grade students exhibited knowledge of this feature. The frequency of using it did not really affect writing quality. As all groups of students' use in expanded noun phrases could fulfill teachers' expectation, expanded noun phrase's role in predicting writing quality would be non-significant.

Moreover, the analysis in Chapter 4 demonstrated there were different types of post-modifiers. A post-modifier could be (a) a noun connected by a preposition (*the most diverse things [about the two]),* (b) a nominalization connected by a preposition *(differences and similarities [of equal depth]),* or (c) an embedded clause (*tragedies and comedies [that flourished Greek entertainment]*). Among these expanded noun phrases, (b) and (c) are much more abstract and dense than (a) and would naturally be valued more in the context of historical writing. Therefore, if we examined the number of post-modifier (b) and (c), we might get different results because they were really contributing to the academic-ness in the writing.

Last but not least, the findings regarding the association between academic language features and writing quality also shed light on the issues of writing development. According to the outlines of Christie and Derewianka (2008) that show the developmental changes in historical writing, adolescent students encounter more and more uncommonsense knowledge that is construed in non-congruent grammatical resources. During the late adolescence (9^{th} -12^{th} grade), students need to deploy grammatical resources to express abstraction and generalization. Dense expanded noun phrase, nominalization, embedded clause and lexically condense clause structure are all included as features that are characteristic of the adolescence. Among all these

features, nominalization may still be the feature that is valued the most in the language of high school history.

Issues of Interest

Based on the findings in Chapter 4 and discussions in Chapter 5, there are a number of particularly interesting and noteworthy issues. These issues emerged in the discussions and may also lead to the implications in my study.

1. Students in this study did not exhibit a proficient mastery of academic language features.
2. Academic language features are complex. Even a single feature has a lot of internal variances in terms of types and functions.
3. Nominalization and lexical density are particularly important features for adolescents.
4. Better readers show better command of some academic language features but not others, although reading ability has an overall significant effect on the use of these features.
5. Academic language features have a significant impact on teachers' evaluations of writing qualities.

Limitations and Implications

Limitations

It is important to recognize that the definition of writing quality used in my study rested on human judgments by a language art teacher and a history teacher. They were both a part of academic communities in secondary schools who knew little about the linguistic features that interest us. They were skilled readers who had read numerous essays on the same topic and format. They were also trained to reliably using a

standardized rubric. Other communities or cultures, such as historians, may have different perspectives on what constitutes good writing. For instance, historians may value causality in historical discourse that is constructed using nouns and verbs rather than conjunctions. For historians, the use of nominalization may have a more significant impact on writing quality.

An additional concern is that the students in this study were responding to the particular demands of the task at hand. The limited time for writing essays, the limited length of the essays, and the pre-established topic (meaning students were writing based on the same type of textbook portion and lecture) all might have inhibited them from fully demonstrating their knowledge of academic language.

There are other limitations in the present study. In order to examine students' academic language proficiency, students' academic writing was analyzed and discussed. However, only one writing sample written in one class period was collected. Although the expository essay that student wrote in the present study was the most representative genre in secondary history classrooms, we would obtain a more comprehensive picture if we could take into consideration more writing tasks and more genres. Meanwhile, when analyzing the writing samples, data analysis protocols that focus on a certain number of academic features were utilized. I was unable to analyze all the academic language features in the essays, which was also a limitation in the present study.

Overall, such potential limitations do not negate the findings in my study. Rather, we might be able to find more detailed analysis of linguistic features and then highlight the connection between these language features with academic writing. This study

progresses an important step toward identifying and evaluating the roles of lexical and grammatical features and their impact on quality writing and reading development in secondary history classrooms.

Implications for Practice

The analysis of student writing in the academic subject such as history offers teacher and curriculum designer insights regarding how to help students develop control of academic language in the context of secondary history learning.

Building awareness

My findings indicate a need for more attention to academic language features for adolescents in content area literacy instruction. The awareness and understanding of the linguistic challenges should be specific to different lexical and grammatical features. In the finding, we can see students' limited uses of academic language features and the scarcity of nominalization, a key academic language feature. Students must be taught explicitly about these features and their functions in academic writing. The relatively low lexical density in students' writing also indicates a need for training students to use more lexical items, arrange the lexical items in a cohesive way, and writing to the academic genre and register.

To better prepare our students for content area learning, it is also crucial to stress the importance of all academic language features to all students. Since better readers do not necessarily have better command of academic language features, instructional practice to teach academic language should not be limited to ELLs or struggling readers.

Features that must be emphasized

Whereas academic language features are closely related to reading ability and writing quality, it is important to consider each feature with more specificity. For example, when we examine academic vocabulary, the roles of general academic vocabulary and content-specific vocabulary are different. Whereas general academic vocabulary does not play a significant role in students' writing quality, the content-specific vocabulary may receive more attention from disciplinary specialist and thus play a more important role in their evaluation. In terms of expanded noun phrases, different types of post-modifiers play different roles in academic writing as well. A simple noun connection using a preposition does not necessarily make a noun phrase more complex and abstract. An embedded clause serves a more important role in a dense construction of experiential meaning and a higher lexical density.

The significance of different academic language features varies according to grade levels. In high school setting, most students already have a basic functional knowledge of features including expanded noun phrases, academic vocabulary, and embedded clause, which could be seen in the results of the present study. Nominalization seems more challenging but it is particularly important because students start building their knowledge of this feature in high school content area learning. This leads to the discussion regarding the different roles of these academic language features for a certain stage. As Fitzgerald and Shanahan (2000) suggest, at the high school level, it is pivotal for students to have the critical features such as complicated syntactical structures and organizational structures within texts. These constitute a necessary step for students to be able to comprehend and create complex text in secondary content areas. The mastery of complicated syntactical and organizational

structures, in the context of reading and writing in history, relies heavily on the deployment of nominalization in a complex and abstract text with high lexical density. Knowledge of nominalization to construct dense chunk of text must be emphasized in high school years.

The acknowledged significance of academic language features and their connection to reading ability and writing quality furthermore allow us to discuss what lexical and grammatical features must be taught in the classrooms, given the limited time in content area classrooms and wide range of ways in which language is used in academic settings (Bunch, 2006). In the context of ninth-grade history classroom, students must be taught to use nominalization proficiently to construct an abstract, dense and complex structure in history. They should learn how to pack more lexical items and content words into clauses that are structured into a hierarchical way. Most importantly, when reading in history, they have to learn how historians use these language functions realize meaning in this content area.

This need for more awareness and better knowledge of academic language features can be addressed through a functional approach to language (e.g., Fang & Schleppegrell, 2008), one that focuses not only on grammatical forms but also the functions these forms realize in disciplinary meaning making. The effect of using a functional approach on academic language development and content area learning has been documented by a number of studies (e.g. Schleppegrell & de Oliveira, 2006; Aguirre-Muñoz el al, 2006a, 2006b; Hammond, 2006; Spycher, 2007; Huang, 2004; Echevarria et al., 2006). The key idea is to explicitly teach students features that are representative of academic language and specific content area learning. In terms of

history, Coffin (2006a & 2006b) suggest that students must be offered analysis of successful models of using academic language in history. Analysis of history textbooks can show students successful uses of academic language features. Students must also be taught explicitly to fulfill the requirements of an academic essay in content areas such as history. Based on the importance of nominalization, students must be taught to interpret and create this feature in their historical reading and writing. Strategies such as teaching students to convert between interactional register and academic register can help students understand the functions of nominalization.

Suggestions for preparing teachers to teach academic language

The need for better instructional practice naturally leads to the issue of teachers' professional development. Due to the complexity and variety of academic language features, we cannot expect content area teachers be able to teach these features automatically. As Coffin (2006a) argues, teachers must be provided with a framework for professional development in which a collaborative approach and a partnership between educational linguists, literacy consultants, and history teachers is essential.

Changing teachers' attitudes toward academic language is the first crucial step to ensure any long-term impact on students' academic language development (Coffin, 2006a). Lesley et al. (2007) proposes that preservice teachers' attitudes and reading behaviors must be addressed in a content area literacy course and preservice teachers must develop improved concepts about academic reading and a willingness to explore multiple texts. In order to promote effective instruction in secondary content area classrooms, teachers should be offered opportunities to reconceptualize their notions of content area literacy practice in school settings (Stevens, 2002). A good knowledge of the relationship between academic language and content area learning could improve

teachers' awareness to teaching previously invisible aspects of texts and subsequently developing students' control of academic language (Coffin, 2006a).

Teachers must understand the specialized demands of academic language and linguistic features specific to disciplinary areas. They should be prepared to directly and explicitly address the specific and highly specialized disciplinary reading demands of content areas and teacher training programs must incorporate the grammatical and lexical features that construct disciplinary knowledge (e.g., de Oliveira, 2010; Schleppegrell & de Oliveira, 2006).

Teacher education must take the role of preparing teachers with well-established theory and application in academic language development. Professional development can build positive reading and writing attitude, successful reading and writing behaviors, and knowledge of academic language features in various academic disciplines.

Implications for Research

First of all, the academic language development of mainstream students in content area classrooms should receive more attention. Whereas most empirical studies included ELLs as their target population in developing academic language, the results in the present study suggest, mainstream students, especially students of low reading abilities, exhibit a low use of all academic language features and thus demand more attention in their academic language development. Therefore, the research with respect to academic language development should not be limited to ELLs.

Any research studying academic language development must adopt a comprehensive understanding of the complex nature of academic language. A narrow conceptualization of academic language as any feature alone such as academic vocabulary limits the effectiveness of academic language instruction. In the current

study, academic vocabulary and embedded clause that traditionally receive most of the attention in academic language research cannot explain very well the differences in writing qualities. Any feature alone is not sufficient as complex grammatical structures and discourse patterns together determine the writing quality (Carr, Sexton, & Lagunoff, 2006; Zwiers, 2008; Bruna, et al., 2007). But for different age groups and in a certain subject area, some feature may be more important and challenging than other features.

Although the present study did not study teachers' attitudes and knowledge directly, the results may offer some background to understand teachers' attitudes and knowledge. Empirical studies have been conducted to explore teachers' knowledge and expertise in academic language and its influence on classroom instruction (e.g. Bruna et al. 2007; Spycher, 2007; Bailey et al., 2007). Although the data in this study say little with respect to teachers' attitudes, the results revealed the close connection between academic language use and teachers' evaluation of writing quality. These results implied that teachers hold linguistic expectation on students' academic writing and their accurate use of academic language features, which corresponds to the previous studies regarding teachers' expectation on academic writing in content area learning (de Oliveira, 2011; Aguirre-Muñoz el al, 2006a, Zwiers, 2007). The question that remains to be answered is the progress students may make if their teachers specify and elaborate their expectation before the academic writing. Future research can definitely explore further to address this question.

Through this study, we understand the impact of different uses of academic language features on writing quality. The academic language features in the current study point to the linguistic complexity, abstraction and technicality in academic

language of secondary schooling (Christie, 2002; Christie & Derewianka, 2008). Academic language development over the years of schooling presents new challenges at each level and in each new subject area. For the academic language in ninth grade history classroom, nominalization that construes abstractness and technicality was the most challenging feature. In future work, we must consider to what degree specific intervention of a certain linguistic feature will benefit the adolescents. A comprehensive linguistic model that can predict an essay's writing quality by examining the use of various academic language features is especially desirable.

Last but not least, for future research, it is important to recognize the internal complexity in using and understanding the grammatical and lexical features of academic language. Whereas quantitative study of language feature can give us a large-scale analysis, it is important to acknowledge the complex nature of each feature. For example, future research will need to examine the relationship between content-specific (history) vocabulary and reading ability as well as writing quality. Also as we could see in the finding part, whereas embedded clause is regarded as a significant index of academic language, at times students use embedded clauses to realize an interactional style in their writing. Future research should explore, for example, the connection between "interactional" embedded clause and the "academic-ness" of their essays. Without understanding the intricate nature of every academic language feature, we cannot accurately understand their connection to students' academic language development.

Overall, by focusing upon secondary students' academic writing in world history classrooms, this study was designed to lead to further discussion regarding

adolescents' academic language development. Adopting Systemic Linguistic Analysis, the present study explored ninth graders' use of academic language in their historical writing. The finding suggests that students used various academic language features differently in their historical writing. Nominalization was the most challenging feature based on its fewest occurrences in the corpus of essays. The results of this study indicate that more proficient readers used academic language features more successfully. These findings also suggest the close association between academic language use and the writing qualities evaluated by classroom teacher.

This study contributes to the ongoing discussion regarding conceptualization and instruction of academic language in secondary school content areas (history, in this particular study). Whereas academic vocabulary and comprehension strategies have received more attention in teaching participants to read and write in content areas, this study raises the awareness of teachers and student to the demanding nature and essential role of academic language features. The knowledge of a variety of academic language features can also provide a framework for classroom teachers to effectively incorporate grammatical features into reading and writing instruction.

The finding reveals the crucial role of nominalization for adolescent writers. For students of different reading abilities, the most conspicuous differences lie in the use of nominalization and lexical density rather than academic vocabulary. It suggests that a common sense of weakness in academic vocabulary for low reading students may not play a decisive role in academic language development. Furthermore, Students' needs in developing academic writing should be addressed by developing students' lexical richness in the context of reading and writing rather than solely teaching academic

vocabulary and focusing on the quantity of these academic vocabulary words. In addition, in the corpus of the text, students' frequent use of expanded noun phrases is noteworthy. The insignificant connection between writing quality and embedded clause suggests that the use of more embedded clauses does not necessarily result in higher quality academic writing. We must pay more attention to the functions these embedded clauses serve including their contribution to the experiential meaning and relevancy to the topic flow.

The present study enables educators and researchers to identify what adolescents know and can do with academic language in the current learning context so that instruction or remediation can be designed to meet their needs. By examining the relationship between academic language use and reading ability, the present study sheds light on the actual challenges of academic language to students of different reading abilities. The analyses of academic language features also indicate the development of academic writing in the content area of world history. In high-quality essays, we can find historical meanings are usually construed in a more abstract way that move beyond personal perception and lived experience toward a more objective and impersonal analysis and infused judgment.

Academic language is the language used in schooling for purposes of learning. It evolves along with the knowledge students develop across the years of schooling and in different subject areas, becoming more dense and abstract as students advance through different phases of schooling. In secondary school, we expect students to use academic language to read and write successfully in different content areas. To do that, students must master constellations of features that together construct academic texts

successfully. And this attention to language must go far beyond vocabulary development and knowledge of word meaning. Students must be taught to make explicit connection between the resources of linguistic features and meaning in the academic context.

APPENDIX A
BENCHMARK ESSAYS

Five-Point Essay

The Romans and Greeks greatly influenced later civilizations, even the present day. Their accomplishments, ideas and examples were revolutionary and many of them are incorporated into modern-day society. These two great empires were powerful, important parts of history. Their governments were predecessors to some of the most influential and successful governments today, like the United States and many others. Three of their most well-known influences on modern culture are their religion, government, and the level of equality they had with their empires.

Greek and Roman Gods have influenced an unimaginable number of literacy words. Authors of thousands of different genres of books have taken inspiration from the Greek and Roman Gods. The Greek Gods were the forefathers of the Roman Gods. They are incredibly similar in their powers, attitudes, and human-like qualities. The Roman Gods were believed to be a sort-of copycat of the Greek Gods, but nevertheless were a great influence on the world. Both the Roman and Greek gods were temperamental, based on common necessities of life and or unexplainable events or forces, and had many Gods and Goddesses. Thus they backed each other up, and strengthened their influence on future peoples. So the Roman and Greek gods had similar characteristics, formed for different reasons.

Both Greece and Rome were broken up into city-states (polis). Their forms of governments in this way were quite similar. However in some parts of Greece (Sparta) these were at least a partial democracy. All adult males were allowed to vote on issues,

thus giving them power over their own fate. In Rome, there was not even partial democracy. Unlike Greece Rome's Government was less lenient and equal. Woman had many more rights under Greek government (in some parts) than Rome. They had jobs in trade, and in general had a mere equal standing with men than Rome. Their systems of Government and partial equality of women most likely inspired governments like the United States to look to Greek government for ideas, whereas Rome's government was less influential in that respect because it was patriarchal, like most ancient, even current nations.

Slaves were imperative to the survival and well-being of both Greece and Rome. They allowed Greek people the time to vote, sculpt, and study science, and philosophy. They also were one-third of Rome's population and thus were very influential to their wealth and survival, providing labor for agriculture etc. slaves allowed the creation of the famous Greek philosophy, art, science, government and sculpting which are still used today. Slaves also allowed the Romans to survive and prosper, keeping their civilization alive, and allowing it to expand its power and influence, thus allowing it to have a greater influence on the present day.

Greece and Rome were two major civilizations from the past whose influences were so great that they survived and prospered even the present times. Many other civilizations have left their mark on the world through countless means. Each one adds a piece of culture and knowledge to our ever-growing supply, and allows us to learn from the past and improve our present.

Four-Point Essay

Greece and Rome have similarities and differences. Those two civilizations had a time period that was close to one another. They are both similar and different in government, culture, and influence on European societies.

Government of classical Greece and the Roman empire were both different. Rome was a republic meaning that people elected representatives to speak for them in the government. Greece had many different governments. They had a monarchy, in which a king or queen ruled but had limited power. They ad an Aristocracy, meaning that the wealthy ruled. They had an oligarchy which only a handful of people ruled. They also had a democracy where the people have the power. Both of these civilizations had tyrants or dictators. Tyrants back then were people that go power by caring about their people and listening to their needs.

The culture of those people were similar in some ways but different in others. They were body polytheistic, meaning that they believed in many gods. However, they did not believe in all the same gods. Greeks usually built temples and statues to honor the gods. The Romans also did the same. Greece and Rome were also interested it sports but the Romans are a little more violent. Greece created the Olympics and Athletes competed in sporting events against each other. Romans had the coliseum which had gladiator fights, chariot races, and bloody davels.

Both of these civilizations had a great influence on European society. Greeks had an alphabet system that is the basis of many alphabets today, even English. Also they had many advancements in science and art. Their creation of the Olympics made games that are still performed today. The Romans had an advanced number system called Roman numerals. They also had a language that is the basis of many languages

today. English, Spanish, French, etc, all have roots in the Roman language Latin. Roman law is also the basis of many law systems today.

Rome and Greece are both important civilizations. We probably would not be where we are today if we did not have them. They both have shaped human kind. They have similarities and difference s in their government, culture, and influence. They are both similar in how they are great civilizations of our past.

Three-Point Essay

Romans and Greeks are two great people in the past. Their culture and government was so alike, but different, the Romans with their everlasting writing and the Greeks with their marvelous statues. The Romans and the Greeks are so alike and they are different.

The Romans gods were originated from the Greeks. All the gods were exactly the same, but they had different names. They still saw Zeus or Jupiter as the god of the heavens and Hera or Junow was still his wife. A difference is they worshiped different gods as better than other. For the Greeks they disliked Ares or Mars because they hated war, but the Romans loved him because they enjoy war.

Their government was very different. While the Greeks stayed as a democracy the Romans government changed. They went from a Republic to an empire. For the Greeks there was voting among the people. The Romans had people that were elected a position to make the laws and rules. Something in their government that was the same was that only men that were citizens of the Empire could vote or be in an election for a position.

The cultures of both empires influence us today. They both influence people in architect. The Greeks were known for their statues that showed strength and power, but no face expressions. The Romans showed statues that were doing an activity and they did have face expressions. One difference was the Romans Latin language was used more than the Greeks. Today it is ued in all the languages and writing.

That is why the Romans and Greeks are the same, but very different. Even though they share the same gods they worship them different. Also they have a different government system, but the only allowed men to elect. For their influence today they both had statues, but they were shaped different. Also the Romans Latin language has lived on when the Greeks has not.

Two-Point Essay

Greeks and Romans are both very similar and both very different than each other. They have similar cultures and different cultures. They have similar political ways and different political ways. The two things that stick out to me are that they both have 2 different founders and 2 different ways of government. The most obvious similarity is that they are both located in the Mediterranean.

The Greeks are located in the med. They were founded by Alexander Great. This happened after the fall of Persia. (I think) the Greeks also had a very distinctive way of their government. They used a system called the polis.

The Romans were also located in the Mediterranean. They were founded by Romulus. Romulus had a brother too named Romulus who helped him. But Romulus was scared that his brother would take his position on the throne so he killed him. That

is where Rome got his name, after their founder Romulus. The Romans had a government system that was popular basis in the day. They had aristocrats. There were small city states, that were individually ruled by an aristocrat. Then there was an emperor who ruled over the aristocrats. People had to be born in to a family that already had an aristocrat to become one.

All in all the Romans & Greeks were similar and different. They were both located in Mediterranean. They had different founders. Rome was founded by Alexander the Great. They both had very different government systems. Rome had aristocrats and Greece had the Polis system.

One-Point Essay

Greeks are very good at architecture and sculpturing, but that was back then. There has been a lot of advances from the time or the Greeks to modern day America like the hand made building and sculptures to the money they used to get and lets not for get the opportunities they had.

So now lets talk about that money! Back then you really did not get that much, but when the Helenistic Kings saw all the beauty people made with their own hands they were willing to spend money to beatify their cities within their states. Bothe Hellenlstic Kings and rich citizens patronized sculptures, though sands or statue erected in towns. Also in modern day America go its kind or the same.

Then there is the opportunities they did not really have many. Unlike people in America they had to do the most out of them for each the thing we are doing today. Its

easier for Americans now in days because we have so much going on like carts, apartments, churches, schools and so much more things that but Greeks did not.

APPENDIX B
ACADEMIC VOCABULARY LIST (COXHEAD, 2000)

Headwords	Other words in the family.
abandon	abandoned, abandoning, abandonment, abandons, e.g.
abstract	abstraction, abstractions, abstractly, abstracts, e.g.
academ	academia, *academic*, academically, academics, academies, e.g.
Access	accessed, accesses, accessibility, accessible, accessing, inaccessible
accommodat	accommodated, accommodates, accommodating*, accommodation*
accompan	*accompanied*, accompanies, accompaniment, accompanying, unaccompanied
Accumulate	accumulated, accumulating, *accumulation,* accumulates
Accura	accuracy, accurately, inaccuracy, inaccuracies, inaccurate
Achiev	achievable, achieved, achievement, achievements, achieves, achieving
acknowledg	*acknowledged,* acknowledges, acknowledging, acknowledgement, acknowledgements
Acquir	acquired, acquires, acquiring, *acquisition*, acquisitions
Adapt	adaptability, adaptable, *adaptation,* adaptations, adapted, adapting, adaptive, adapts
Adequa	adequacy, adequately, inadequacies, inadequacy, inadequate, inadequately
adjacent	
Adjust	adjusted, adjusting, *adjustment,* adjustments, adjusts, readjust, readjusted, readjusting, readjustment, readjustments, readjusts
Administrat	administrates, *administration,* administrations, administrative, administratively, administrator, administrators
Adult	adulthood, *adults*
advocat	advocacy, advocated, advocates, advocating
Affect	affected, affecting, affective, affectively, affects, unaffected
aggregat	aggregated, aggregates, aggregating, aggregation
Aid	aided, aiding, aids, unaided
albeit	
allocat	allocated, allocates, allocating, *allocation,* allocations
alter	alterable, alteration, alterations, altered, altering, alternate, alternating, alters, unalterable, unaltered

alternative	alternatively, alternatives
ambigu	ambiguities, ambiguity, unambiguous, unambiguously
amend	amended, amending, *amendment,* amendments, amends
analog	analogies, *analogous*
analys	analysed, analyser, analysers, analyses, analysing, *analysis*, analyst, analysts, analytic, analytical, analytically
annual	annually
anticipat	*anticipated,* anticipates, anticipating, anticipation, unanticipated
apparent	apparently
append	*appendix*, appended, appends, appending, appendices, appendixes
appreciat	appreciable, appreciably, appreciated, appreciates, appreciating, *appreciation,* unappreciated
approach	approachable, approached, approaches, approaching, unapproachable
appropria	appropriacy, appropriately, appropriateness, inappropriacy, inappropriate, inappropriately
approximat	*approximated*, approximately, approximates, approximating, approximation, approximations
arbitra	arbitrariness, arbitrarily
area	areas
aspect	*aspects*
assembl	assembled, assembles, assemblies, assembling, *assembly*
assess	assessable, assessed, assesses, assessing, *assessment*, assessments, reassess, reassessed, reassessing, reassessment, unassessed
assign	*assigned,* assigning, assignment, assignments, assigns, reassign, reassigned, reassigning, reassigns, unassigned
assist	*assistance,* assistant, assistants, assisted, assisting, assists, unassisted
assum	assumed, assumes, assuming, assumption, assumptions
assur	*assurance*, assurances, assured, assuredly, assures, assuring
attach	*attached,* attaches, attaching, attachment, attachments, unattached
attain	attainable, *attained*, attaining, attainment, attainments, attains, unattainable
attitude	*attitudes*
attribut	attributable, *attributed,* attributes, attributing, attribution

author	authored, authoring, authors, authorship
automat	automatic, automated, automates, automating, *automatically*, automation
availabl	availability, unavailable
aware	awareness, unaware
behalf	
benefi	beneficial, beneficiary, beneficiaries, benefited, benefiting, benefits
bias	biased, biases, biasing, unbiased
bond	bonded, bonding, bonds
brief	brevity, briefed, briefing, briefly, briefs
bulk	bulky
capabl	capabilities, capability, incapable
capacit	capacities, incapacitate, incapacitated
catego	*categories*, categorisation, categorise, categorised, categorises, categorising, categorizing
ceas	ceased, ceaseless, *ceases*, ceasing
challeng	challenged, challenger, challengers, challenges, challenging
channel	channelled, channelling, channels
chapter	chapters
chart	charted, charting, charts, uncharted
chemical	chemically, chemicals
circumstance	*circumstances*
Cite	citation, citations, *cited,* citing, cites
cita	
civil	
clarif	clarification, clarified, clarifies, clarifying, *clarity*
classic	*classical,* classics
clause	clauses
code	coded, codes, coding
coheren	*coherence*, coherently, incoherent, incoherently
coincid	coincided, coincides, coinciding, coincidence, coincidences, coincident, coincidental
collaps	collapsed, collapses, collapsible, collapsing

colleague	*colleagues*
commenc	*commenced*, commences, commencement, commencing, recommences, recommenced, recommencing
comment	commentaries, commentary, commentator, commentators, commented, commenting, *comments*
commission	commissioned, commissioner, commissioners, commissioning, commissions
commit	*commitment,* commitments, commits, committed, committing
commodit	commodities
communicat	communicable, communicated, communicates, communicating, *communication*, communications, communicative, communicatively, uncommunicative
communit	communities
compatibl	compatibility, incompatibility, *incompatible*
compensat	compensated, compensates, compensating, *compensation*, compensations, compensatory
compil	compilation, compilations, *compiled*, compiles, compiling
complement	complementary, complemented, complementing, complements
complex	complexities, complexity
component	componentry, *components*
compound	compounded, compounding, *compounds*
comprehensive	comprehensively
comprise	comprised, comprises, comprising
comput	computation, computational, computations, computable, *computer*, computed, computerised, computers, computing
conceive	conceivable, conceivably, *conceived*, conceives, conceiving, inconceivable, inconceivably
concentrate	concentrated, concentrates, concentrating, *concentration*
concept	conception, concepts, conceptual, conceptualisation, conceptualise, conceptualised, conceptualises, conceptualising, conceptually
conclud	concluded, concludes, concluding, *conclusion*, conclusions, conclusive, conclusively, inconclusive, inconclusively
concurrent	concurrently
conduct	conducted, conducting, conducts
confer	*conference,* conferences, conferred, conferring, confers

confin	*confined*, confines, confining, unconfined
confirm	confirmation, *confirmed,* confirming, confirms
conflict	conflicted, conflicting, conflicts
conform	conformable, conformability, conformance, conformation, conformed, conforming, conformist, conformists,*conformity*, conforms, nonconformist, nonconformists, nonconformity, non-conformist, non-conformists, non-conformity
consen	consensus, consented, consenting, consents
consequent	consequence, *consequences*, consequently
considerable	considerably
consist	consisted, consistency, *consistent*, consistently, consisting, consists, inconsistencies, inconsistency, inconsistent
constan	constancy, constantly, constants, inconstancy, inconstantly
constitu	constituencies, constituency, constituent, constituents, constituted, constitutes, constituting, constitution, constitutions, *constitutional*, constitutionally, constitutive, unconstitutional
constrain	constrained, constraining, constrains, constraint, *constraints*, unconstrained
construct	constructed, constructing, *construction*, constructions, constructive, constructs, reconstruct, reconstructed, reconstructing, reconstruction, reconstructs
consult	consultancy, consultant, consultants, *consultation,* consultations, consultative, consulted, consults, consulting
consum	consumed, *consumer,* consumers, consumes, consuming, consumption
contact	contactable, contacted, contacting, contacts
contemporar	contemporaries
context	contexts, contextual, contextualise, contextualised, contextualising, uncontextualised
contract	contracted, contracting, contractor, contractors, contracts
contradict	contradicted, contradicting, *contradiction*, contradictions, contradictory, contradicts
contrar	contrarily
contrast	contrasted, contrasting, contrastive, contrasts
contribut	contributed, contributes, contributing, *contribution*, contributions, contributor, contributors

controvers	controversies, controversial, controversially, uncontroversial
convene	*convention*, convenes, convened, convening, conventional, conventionally, conventions, unconventional
converse	*conversely*
conver	conversion, conversions, *converted,* convertible, converting, converts
convinc	*convinced*, convinces, convincing, convincingly, unconvinced
cooperat	cooperated, cooperates, cooperating, cooperation, *cooperative,* cooperatively, co-operate, co-operated, co-operates, co-operation, co-operative, co-operatively
coordinate	coordinated, coordinates, coordinating, *coordination*, coordinator, coordinators, co-ordinate, co-ordinated, co-ordinates, co-ordinating, co-ordination, co-ordinator, co-ordinators
core	cores, coring, cored
corporat	corporates, corporation, corporations
correspond	corresponded, correspondence, *corresponding*, correspondingly, corresponds
coupl	coupled, coupling, couples
creat	created, creates, creating, creation, creations, creative, creatively, creativity, creator, creators, recreate, recreated, recreates, recreating
credit	credited, crediting, creditor, creditors, credits
criteri	criterion
crucial	crucially
cultur	*cultural,* culturally, cultured, cultures, uncultured
currenc	currencies
cycl	cycled, cycles, cyclic, cyclical, cycling
data	
debat	debatable, debated, debates, debating
decade	*decades*
declin	declined, declines, declining
deduc	deduced, deduces, deducing, *deduction*, deductions
defin	definable, defined, defines, defining, *definition*, definitions, redefine, redefined, redefines, redefining, undefined
definit	definitely, definitive, indefinite, indefinitely
demonstrat	demonstrable, demonstrably, demonstrated, demonstrates, demonstrating, demonstration, demonstrations, demonstrative,

	demonstratively, demonstrator, demonstrators
denot	denotation, denotations, denoted, denotes, denoting
deny	deniable, denial, denials, denied, denies, denying, undeniable
deni	
depress	depressed, depresses, depressing, *depression*
deriv	derivation, derivations, derivative, derivatives, *derived*, derives, deriving
design	designed, designer, designers, designing, designs
despite	
detect	detectable, *detected*, detecting, detection, detective, detectives, detector, detectors, detects
deviat	deviated, deviates, deviating, *deviation*, deviations
device	devices
devot	*devoted*, devotedly, devotes, devoting, devotion, devotions
differentiat	differentiated, differentiates, differentiating, *differentiation*
dimension	dimensional, *dimensions,* multidimensional
diminish	*diminished*, diminishes, diminishing, diminution, undiminished
discrete	discretely, *discretion,* discretionary, indiscrete, indiscretion
discriminat	discriminated, discriminates, discriminating, *discrimination*
displac	displaced, *displacement*, displaces, displacing
display	displayed, displaying, displays
dispos	disposable, *disposal,* disposed, disposes, disposing
distinct	*distinction*, distinctions, distinctive, distinctively, distinctly, indistinct, indistinctly
distort	*distorted*, distorting, distortion, distortions, distorts
distribut	distributed, distributing, *distribution,* distributional, distributions, distributive, distributor, distributors, redistribute, redistributed, redistributes, redistributing, redistribution
divers	diversely, diversification, diversified, diversifies, diversify, diversifying, *diversity*
document	documentation, documented, documenting, documents
domain	domains
domestic	domestically, domesticate, domesticated, domesticating, domestics
dominat	dominance, *dominant*, dominated, dominates, dominating, domination

draft	drafted, drafting, drafts, redraft, redrafted, redrafting, redrafts
drama	dramas, *dramatic*, dramatically, dramatise, dramatised, dramatising, dramatises, dramatisation, dramatisations, dramatist, dramatists, dramatization, dramatizations, dramatizing
duration	
dynamic	dynamically, dynamics
econom	*economic*, economical, economically, economics, economies, economist, economists, uneconomical
edit	edited, editing, *edition,* editions, editor, editorial, editorials, editors, edits
element	*elements*
eliminat	eliminated, eliminates, eliminating, elimination
emerg	*emerged,* emergence, emergent, emerges, emerging
empha	emphasise, emphasised, emphasising, emphatic, emphatically
empiric	empirically, empiricism
enabl	enabled, enables, enabling
encounter	*encountered,* encountering, encounters
energ	energetic, energetically, energies
enforc	enforced, *enforcement,* enforces, enforcing
enhanc	*enhanced,* enhancement, enhances, enhancing
enorm	enormity, enormously
ensur	ensured, ensures, ensuring
entit	*entities*
environment	environmental, environmentalist, environmentalists, environmentally, environments
equat	equated, equates, equating, *equation*, equations
equip	*equipment,* equipped, equipping, equips
equivalen	equivalence
erod	eroded, erodes, eroding, *erosion*
error	erroneous, erroneously, errors
establish	disestablish, disestablished, disestablishes, disestablishing, disestablishment, *established*, establishes, establishing, establishment, establishments
estate	estates

estimat	estimated, estimates, estimating, estimation, estimations, over-estimate, overestimate, overestimated, overestimates, overestimating, underestimate, underestimated, underestimates, underestimating
ethic	*ethical*, ethically, ethics, unethical
ethnic	ethnicity
evaluat	evaluated, evaluates, evaluating, *evaluation,* evaluations, evaluative, re-evaluate, re-evaluated, re-evaluates, re-evaluating, re-evaluation
eventual	eventuality, *eventually*
eviden	evidenced, *evidence*, evidential, evidently
Evolv	*evolution*, evolved, evolving, evolves, evolutionary, evolutionist, evolutionists
exceed	exceeded, exceeding, exceeds
exclud	*excluded*, excludes, excluding, exclusion, exclusionary, exclusionist, exclusions, exclusive, exclusively
exhibit	exhibited, exhibiting, exhibition, exhibitions, exhibits
expand	expanded, expanding, expands, *expansion,* expansionism, expansive
expert	expertise, expertly, experts
explicit	explicitly
exploit	*exploitation,* exploited, exploiting, exploits
export	exported, exporter, exporters, exporting, exports
expos	exposed, exposes, exposing, *exposure,* exposures
external	externalisation, externalise, externalised, externalises, externalising, externality
extract	extracted, extracting, extraction, extracts
facilitat	facilitated, facilitates, facilities, facilitating, facilitation, facilitator, facilitators, facility
factor	factored, factoring, *factors*
featur	featured, *features,* featuring
federa	federation, federations
fee	*fees*
file	filed, files, filing
final	finalise, finalised, finalises, finalising, finality, finally, finals
financ	financed, finances, *financial*, financially, financier, financiers, financing
finite	infinite, infinitely

flexibl	*flexibility,* inflexible, inflexibility
fluctuat	fluctuated, fluctuates, fluctuating, fluctuation, *fluctuations*
focus	focused, focuses, focusing, refocus, refocused, refocuses, refocusing
format	formatted, formatting, formats
formula	formulae, formulas, formulate, formulated, formulating, formulation, formulations, reformulate, reformulated, reformulating, reformulation, reformulations
forthcoming	
found	*founded*, founder, founders, founding, unfounded
framework	frameworks
function	functional, functionally, functioned, functioning, functions
fund	funded, funder, funders, funding, *funds*
fundamental	fundamentally
furthermore	
gender	genders
generat	*generated,* generates, generating
glob	*global*, globally, globalisation, globalization
goal	*goals*
grad	graded, grades, grading
grant	*granted*, granting, grants
guarantee	guaranteed, guaranteeing, guarantees
guideline	*guidelines*
hence	
hierarch	*hierarchical,* hierarchies
highlight	*highlighted,* highlighting, highlights
hypothes	hypotheses, hypothesise, hypothesised, hypothesises, hypothesising, hypothetical, hypothetically
identical	identically
identif	identifiable, identification, *identified*, identifies, identifying, identities, identity, unidentifiable
ideolog	ideological, ideologically, ideologies
ignor	ignorance, ignore, *ignored,* ignores, ignoring
illustrat	*illustrated*, illustrates, illustrating, illustration, illustrations, illustrative

imag	imagery, images
immigrat	immigrant, immigrants, immigrated, immigrates, immigrating, *immigration*
impact	impacted, impacting, impacts
implement	*implementation*, implemented, implementing, implements
implicat	implicated, implicates, implicating, implication, *implications*
implicit	implicitly
imply	implied, *implies*, implying
impli	
impos	*imposed*, imposes, imposing, imposition
incentive	incentives
inciden	incident*,* incidentally, incidents
inclin	*inclination*, inclinations,inclined, inclines, inclining
income	incomes
incorporat	*incorporated,* incorporates, incorporating, incorporation
index	indexed, indexes, indexing
indicat	indicated, indicates, indicating, indication, indications, indicative, indicator, indicators
individual	individualised, individuality, individualism, individualist, individualists, individualistic, individually, individuals
induc	*induced*, induces, inducing, induction
inevitabl	inevitability, *inevitably*
infer	inference, inferences, *inferred,* inferring, infers
infrastructure	infrastructures
inherent	inherently
inhibit	inhibited, inhibiting, *inhibition,* inhibitions, inhibits
initial	initially
initiat	initiated, initiates, initiating, initiation, initiations, initiative, *initiatives*, initiator, initiators
injur	injured, injures, injuries, injuring, *injury*, uninjured
innovat	*innovation*, innovated, innovates, innovating, innovations, innovative, innovator, innovators
input	inputs
insert	inserted, inserting, insertion, inserts

insight	insightful, *insights*
inspect	inspected, inspecting, *inspection,* inspections, inspector, inspectors, inspects
instance	instances
institut	instituted, institutes, instituting, institution, institutional, institutionalise, institutionalised, institutionalises, institutionalising, institutionally, institutions
instruct	instruction, instructed, instructing, *instructions,* instructive, instructor, instructors, instructs
integral	
integrat	integrated, integrates, integrating, *integration*
integrity	
intelligen	*intelligence*, intelligently, unintelligent
intens	intensely, intenseness, intensification, intensified, intensifies, intensify, intensifying, intension, *intensity*, intensive, intensively
interact	interacted, interacting, *interaction*, interactions, interactive, interactively, interacts
intermediate	
internal	internalise, internalised, internalises, internalising, internally
interpret	*interpretation*, interpretations, interpretative, interpreted, interpreting, interpretive, interprets, misinterpret, misinterpretation, misinterpretations, misinterpreted, misinterpreting, misinterprets, reinterpret, reinterpreted, reinterprets, reinterpreting, reinterpretation, reinterpretations
interval	intervals
interven	intervened, intervenes, intervening, *intervention,* interventions
intrinsic	intrinsically
invest	invested, investing, *investment*, investments, investor, investors, invests, reinvest, reinvested, reinvesting, reinvestment, reinvests
investigat	investigated, investigates, investigating, *investigation*, investigations, investigative, investigator, investigators
invok	*invoked*, invokes, invoking
involv	*involved*, involvement, involves, involving, uninvolved
isolat	*isolated,* isolates, isolating, isolation, isolationism
issu	issued, *issues*, issuing
item	itemisation, itemise, itemised, itemises, itemising, *items*

job	jobs
journal	journals
justif	justifiable, justifiably, *justification*, justifications, justified, justifies, justifying, unjustified
label	labelled, labelling, labels
labour	laboured, labouring, labours
layer	layered, layering, layers
lectur	lectured, lecturer, lecturers, lectures, lecturing
legal	illegal, illegality, illegally, legality, legally
legislat	legislated, legislates, legislating, *legislation*, legislative, legislator, legislators, legislature
levy	levies
liberal	liberalise*,* liberalism, liberalisation, liberalised, liberalises, liberalising, liberalization, liberate, liberated, liberates, liberation, liberations, liberating, liberator, liberators, liberally, liberals
licen	licences, license, licensed, licensing, licenses, unlicensed
likewise	
link	linkage, linkages, linked, linking, links
locat	located, locating, *location*, locations, relocate, relocated, relocates, relocating, relocation
logic	illogical, illogically, logical, logically, logician, logicians
maintain	maintained, maintaining, maintains, *maintenance*
major	majorities, majority
manipulat	manipulated, manipulates, manipulating, *manipulation,* manipulations, manipulative
manual	manually, manuals
margin	*marginal,* marginally, margins
matur	immature, immaturity, maturation, maturational, matured, matures, maturing, maturity
maximis	max, maximised, maximises, maximising, maximisation, *maximum*
mechanism	mechanisms
media	
mediate	mediated, mediates, mediating, *mediation*
medical	medically

medium	
mental	mentality, mentally
method	methodical, methodological, methodologies, methodology, methods
migrate	migrant, migrants, migrated, migrates, migrating, *migration,* migrations, migratory
military	
minimal	minimalisation, minimalise, minimalises, minimalised, minimalising, minimalist, minimalists, minimalistic, minimally
minimis	*minimised*, minimises, minimising
minimum	
minist	ministered, ministering, ministerial, ministries
minor	*minorities*, minority, minors
mode	modes
modif	modification, modifications, *modified,* modifies, modifying, unmodified
monitor	monitored, *monitoring,* monitors, unmonitored
motiv	motivate, motivated, motivates, motivating, *motivation,* motivations, motives, unmotivated
mutual	mutually
negat	*negative*, negated, negates, negating, negatively, negatives
network	networked, networking, networks
neutral	neutralisation, neutralise, neutralised, neutralises, neutralising, neutrality
nevertheless	
nonetheless	
norm	*norms*
notion	notions
notwithstanding	
nuclear	
objectiv	objectively, objectivity
obtain	obtainable, *obtained*, obtaining, obtains, unobtainable
obvious	obviously
occup	occupancy, occupant, occupants, occupation,*occupational,* occupations, occupied, occupier, occupiers, occupies, occupying

occur	occurred, occurrence, occurrences, occurring, occurs, reoccur, reoccurred, reoccurring, reoccurs
odd	odds
offset	offsets, offsetting
ongoing	
option	optional, options
orient	orientate*,* orientated*,* orientates, *orientation,* orientating, oriented, orienting, orients, reorient, reorientation
outcome	*outcomes*
output	outputs
overall	
overlap	overlapped, overlapping, overlaps
overseas	
panel	panelled, panelling, panels
paradigm	paradigms
paragraph	paragraphing, paragraphs
parallel	paralleled, parallels, unparalleled
parameter	*parameters*
participat	participant, participants, participated, participates, participating, *participation*, participatory
partner	partners, *partnership*, partnerships
passive	passively, passivity
perceiv	*perceived,* perceives, perceiving, perception, perceptions
percent	percentage, percentages
period	periodic, periodical, periodically, periodicals, periods
persist	persisted, persistence, *persistent*, persistently, persisting, persists
perspective	perspectives
phase	phased, phases, phasing
phenomen	phenomena, phenomenal
philosoph	philosopher, philosophers, philosophical, philosophically, philosophies, philosophise, philosophised, philosophises, philosophising
physical	physically
plus	pluses

polic	policies
portion	portions
pose	*posed*, poses, posing
positive	positively
potential	potentially
practitioner	*practitioners*
preced	preceded, precedence, precedent, precedes, *preceding,* unprecedented
precis	imprecise, precisely, precision
predict	predictability, predictable, predictably, *predicted*, predicting, prediction, predictions, predicts, unpredictability, unpredictable
predomina	predominance, *predominantly*, predominate, predominated, predominates, predominating
preliminar	preliminaries
presum	presumably, presumed, presumes, presuming, *presumption,* presumptions, presumptuous
previous	previously
primar	primarily
primacy	primacy
principal	principally
principle	principled, principles, unprincipled
prior	
priorit	priorities, prioritisation, prioritise, prioritised, prioritises, prioritising
proceed	procedural, *procedure,* procedures, proceeded, proceeding, proceedings, proceeds
process	processed, processes, processing
professional	professionally, professionals, professionalism
prohibit	*prohibited,* prohibiting, prohibition, prohibitions, prohibitive, prohibits
project	projected, projecting, projection, projections, projects
promot	promoted, promoter, promoters, promotes, promoting, promotion, promotions
proportion	disproportion, disproportionate, disproportionately, proportional, proportionally, proportionate, proportionately, proportions
prospect	prospective, prospects

protocol	protocols
psycholog	psychological, psychologically, psychologist, psychologists
publication	publications
publish	*published,* publisher, publishers, publishes, publishing, unpublished
purchas	purchased, purchaser, purchasers, purchases, purchasing
pursu	pursued, pursues, pursuing, pursuit, pursuits
qualitative	qualitatively
quot	*quotation,* quotations, quoted, quotes, quoting
radical	radically, radicals
random	randomly, randomness
rang	ranged, ranges, ranging
ratio	ratios
rational	irrational, rationalisation, rationalisations, rationalise, rationalised, rationalises, rationalising, rationalism, rationality, rationally
react	reacted, reacts, reacting, *reaction*, reactionaries, reactionary, reactions, reactive, reactivate, reactivation, reactor, reactors
recover	recoverable, recovered, recovering, recovers, *recovery*
refin	refined, refinement, refinements, refines, refining
regime	regimes
region	regional, regionally, regions
register	deregister, deregistered, deregistering, deregisters, deregistration, *registered,* registering, registers, registration
regulat	deregulated, deregulates, deregulating, deregulation, regulated, regulates, regulating, regulation,regulations, regulator, regulators, regulatory, unregulated
reinforc	*reinforced*, reinforcement, reinforcements, reinforces, reinforcing
reject	*rejected,* rejecting, rejection, rejects, rejections
relax	relaxation, *relaxed*, relaxes, relaxing
releas	released, releases, releasing
relevant	irrelevance, irrelevant, relevance
reluctan	*reluctant*, reluctantly
rely	reliability, reliable, reliably, *reliance*, reliant, relied, relies, relying, unreliable
reli	

removv	removable, removal, removals, *removed*, removes, removing
requir	*required*, requirement, requirements, requires, requiring
research	researched, researcher, researchers, researches, researching
resid	resided, residence, *resident*, residential, residents, resides, residing
resolv	*resolution,* resolved, resolves, resolving, unresolved
resourc	resourced, resourceful, *resources*, resourcing, unresourceful, under-resourced
respond	responded, respondent, respondents, responding, responds, *response*, responses, responsive, responsiveness, unresponsive
restor	restoration, restored, restores, restoring
restrain	restrained, restraining, restrains, restraint, *restraints*, unrestrained
restrict	*restricted,* restricting, restriction, restrictions, restrictive, restrictively, restricts, unrestricted, unrestrictive
retain	*retained*, retaining, retainer, retainers, retains, retention, retentive
reveal	*revealed,* revealing, reveals, revelation, revelations
revenue	revenues
revers	reversal, reversed, reverses, reversible, reversing, reversals, irreversible
revis	revised, revises, revising, *revision*, revisions
revolution	revolutionary, revolutionaries, revolutionise, revolutionised, revolutionises, revolutionising, revolutionist, revolutionists, revolutions
rigid	rigidities, rigidity, rigidly
role	roles
rout	routed, routes, routing
scenario	scenarios
schedul	reschedule, rescheduled, reschedules, rescheduling, scheduled, schedules, scheduling, unscheduled
schem	schematic, schematically, schemed, schemes, scheming
scope	
section	sectioned, sectioning, sections
sector	sectors
secur	insecure, insecurities, insecurity, secured, securely, secures, securing, securities, *security*
seek	seeking, seeks, *sought*

select	selected, selecting, selection, selections, selective, selectively, selector, selectors, selects
sequenc	sequenced, sequences, sequencing, sequential, sequentially
series	
sex	sexes, sexism, sexual, sexuality, sexually
shift	shifted, shifting, shifts
significan	insignificant, insignificantly, significance, significantly, signified, signifies, signify, signifying
similar	dissimilar, similarities, similarity, similarly
simulat	simulated, simulates, simulating, *simulation*
site	sites
so-called	
sole	*solely*
somewhat	
sourc	sourced, sources, sourcing
specific	specifically, specification, specifications, specificity, specifics
specif	specifiable, *specified,* specifies, specifying, unspecified
spher	spheres, spherical, spherically
stabl	instability, stabilisation, stabilise, stabilised, stabilises, stabilising, *stability,* unstable
statistic	statistician, statisticians, statistical, statistically, *statistics*
status	
straightforward	
strateg	strategic, *strategies*, strategically, strategist, strategists
stress	stressed, stresses, stressful, stressing, unstressed
structure	restructure, restructured, restructures, restructuring, structural, structurally, structured, structures, structuring, unstructured
styl	styled, *styles,* styling, stylish, stylise, stylised, stylises, stylising
submit	submission, submissions, submits, *submitted,* submitting
subordinat	subordinates, subordination
subsequent	subsequently
subsid	*subsidiary,* subsidies, subsidise, subsidised, subsidises, subsidising
substitut	substituted, substitutes, substituting, *substitution*

successo	succession, successions, *successive,* successively, successors
successi	
sufficien	sufficiency, insufficient, insufficiently, sufficiently
sum	summation, summed, summing, sums
supplement	*supplementary,* supplemented, supplementing, supplements
survey	surveyed, surveying, surveys
surviv	survival, survived, survives, surviving, survivor, survivors
suspend	*suspended*, suspending, suspends, suspension
sustain	*sustainable*, sustainability, sustained, sustaining, sustains, sustenance, unsustainable
symbol	*symbolic,* symbolically, symbolise, symbolises, symbolised, symbolising, symbolism, symbols
tap	taped, *tapes,* taping
target	targeted, targeting, targets
task	tasks
team	teamed, teaming, teams
technical	technically
technique	*techniques*
technolog	technological, technologically
temporar	temporarily
tens	*tension*, tensely, tenser, tensest, tensions
termina	terminal, terminals, terminated, terminates, terminating, *termination*, terminations
text	texts, textual
theme	themes, thematic, thematically
thematic	
theor	theoretical, theoretically, theories, theorist, theorists
thereby	
thesis	theses
theses	
topic	topical, topics
trac	traceable, traced, traces, tracing
tradition	non-traditional, *traditional*, traditionalist, traditionally, traditions

transfer	transferable, transference, transferred, transferring, transfers
transform	*transformation,* transformations, transformed, transforming, transforms
transit	transited, transiting, *transition,* transitional, transitions, transitory, transits
transmi	*transmission,* transmissions, transmitted, transmitting, transmits
transport	transportation, transported, transporter, transporters, transporting, transports
trend	trends
trigger	triggered, triggering, triggers
ultimate	*ultimately*
undergo	undergoes, undergoing, undergone, underwent
underwent	
underl	underlay, underlies, *underlying*
undert	*undertaken,* undertakes, undertaking, undertook
uniform	uniformity, uniformly
unif	unification, *unified*, unifies, unifying
unique	uniquely, uniqueness
utilis	utilisation, utilised, utilises, utilising, utiliser, utilisers, *utility,* utilities
valid	invalidate, invalidity, validate, validated, validating, validation, *validity*, validly
vary	invariable, invariably, variability, variable, *variables,* variably, variance, variant, variants, variation, variations, varied, varies, varying
vari	
vehicle	vehicles
version	versions
via	
violat	violated, violates, violating, *violation*, violations
virtual	*virtually*
visibl	visibility, visibly, invisible, invisibility
vision	visions
visual	visualise, visualised, visualised, visualising, visualisation, visually
volume	volumes, vol
vol	

voluntar	voluntarily, volunteer, volunteering, volunteered, volunteers
welfare	
whereas	
whereby	
widespread	

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BIOGRAPHICAL SKETCH

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