Struggling Adolescent Writers: The Relationship between Critical Thinking Skills and Creating Written Text

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Struggling Adolescent Writers:
The Relationship between Critical Thinking Skills and Creating Written Text

By

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Abstract

This study examined critical thinking skill related to composing written text. The student received strategy instruction for critical thinking skills at her instructional level of Bloom’s cognitive domain. Writing samples before and after strategy instruction were scored according to a rubric and compared. Three themes emerged: the achievement gap between independent and expected skills, the benefit of strategy instruction to improve writing and critical thinking and the impact of student attitude on success. Results imply the importance of classroom culture and purposeful instruction to develop critical thinking skills, the importance of targeting the instructional level when providing intervention, the critical nature of the achievement gap at the secondary level and the importance of providing differentiated instruction in content-driven classrooms.
The Relationship between Critical Thinking Skills and Creating Written Text

The ability to speak, read, and write effectively is a visible symbol of an individual’s perceived intellectual ability and an indicator of potential economic and personal success. Creative, higher order thinking skills are a critical component of the successful development of these fundamental literacy skills. Greater economic opportunity is available to those who master the literacy skills expected in mainstream American society and our education system. The goal of K-12 academic curriculum in the United States is to prepare students for success in higher education and/or competitive employment. Yet current statistics give a dismal view of the capabilities of the graduates of America’s public schools. The passage of federal No Child Left Behind legislation in 2002 resulted in massive reform within individual states culminating in the widespread adoption of the Common Core Learning Standards for English Language Arts (ELA) & Literacy. Forty-five states and the District of Columbia have adopted the Common Core Learning Standards that aim to equip all graduates with the skills necessary for college and career readiness in today’s technology driven global economy. The Common Core Curriculum (CCC) specifies literacy standards not only for ELA but also in the areas of social studies, science, and technical subjects. Recent decades have seen a shift in the nature of skills required for post-secondary success as well as a steadily increasing gap between performance expectation and functional ability of graduates. In 2002, California’s Intersegmental Committee of the Academic Senates issued an Executive Summary addressing the level of unpreparedness of college freshman entering the state’s university system. The report identified elements of academic literacy necessary for
college success including “reading, writing, listening, speaking, critical thinking, [and]
the] use of technology…” (p. 2). Also in 2002, a national report, The Neglected “R”, was
issued by the National Commission on Writing in America’s Schools and Colleges. This
report directed national focus on the lack of writing proficiency demonstrated by
American students. Scores reported by the National Assessment of Educational Progress
(NAEP) for 2002 indicated that only 24% of 4th, 8th, and 12th grade students demonstrated
proficiency in writing – meaning roughly three in four students did not demonstrate
adequate writing skill. Nine years later the NAEP reported that approximately 27% of 8th
and 12th grade students scored at or above the proficiency level on writing assessments
(2011). The gains are slight and the stakes are high. Lack of proficiency in all academic
literacy areas limits the options open to students upon graduation and can impact the level
of success attainable in most job markets. Reading, writing, speaking, and thinking are
interrelated skills and students with difficulty in one area often demonstrate issues in
other related areas. This action research case study addresses the skill of writing and the
related skill of higher order thinking as it pertains to struggling adolescent writers in
secondary content area classes. For the purpose of this study, ‘struggling’ is defined as
demonstrating reading comprehension skills at a level three or more grade levels below a
student’s current grade placement. The three year delineation was chosen because it is
policy in my urban district to waive (on request) the foreign language requirement for any
student with an Individualized Education Plan (IEP) who scores three or more grade
levels behind on diagnostic reading inventories utilized by the district. District policy
reasons that students who are not able to read and write proficiently in their native
language will not be able to successfully learn the intricacies of a foreign language. Many
students, with and without IEP modifications, meet the criteria of a struggling student and will experience an exponential increase in their academic struggle at the secondary level.

As an itinerant teacher of the blind and visually impaired (TVI), I provide materials and direct service to students whose primary learning medium is large print and/or Braille. In this capacity, I have the opportunity to observe students in grades K-12 who have a wide range of abilities and are enrolled in a variety of educational placements in the public school system. Though the composition of my caseload changes each school year, I may have the opportunity to provide service to the same student several years over the course of the student’s school career. This type of service delivery allows me to cultivate long-term relationships with students and their families, giving me insight into student literacy development over time.

The vast majority of my students perform below grade level on reading and writing tasks. There are a number of contributing factors that are not the focus of this study but merit mention including but not restricted to limited early literacy experiences with Braille or large print, lack of incidental learning that impacts conceptual development and background knowledge, inaccessibility to visual content that supports learning, increased time needed to read and write in an alternate medium, over-reliance on 1:1 adult support and restrictions imposed by assistive technology. Blind and visually impaired students are able to keep pace with reading assignments using digital auditory text, however there is no short cut for managing the writing task. Good writers are willing to engage in the entire writing process. They understand it is a time-consuming process that requires multiple steps, genuine thought, and organization of ideas and information. Most importantly, they understand that writing is a recursive process that requires
numerous attempts to get it ‘just right’. Many students are willing to turn in what should be considered a rough draft and are satisfied with ‘just enough’ though ‘just enough’ rarely addresses the assigned writing prompt in a thorough, skillful manner. In fact, struggling writers submit woefully inadequate papers that most often contain a few unrelated facts on a topic with no attempt to provide supporting detail or to compose and support a valid thesis. In collaboration with other educators regarding these struggling writers, we discussed the idea of “If you can think, you can write.” Menary (2007) maintains that “writing is thinking in action” and “the act of writing is itself a process of thinking” (p. 622). One must think to write and writing is the tangible result of one’s thought processes displayed on page or screen. And, after all, who can’t think? I have worked with the focus student of this case study for four years and have seen her make significant gains in reading fluency and modest gains in comprehension in upper middle school. I have first hand knowledge of the writing instruction she has received. I have access to past educational diagnostic tests of cognitive ability and achievement that indicate average intelligence and cognition. I am witness to the high level of professional support extended to this student during the academic day including extended time to complete assignments and to allow for accessing materials in Braille. Yet this tenth grade student has resisted mastering the skill of writing and does not demonstrate the ability to independently create a well-constructed paragraph much less write a well-organized essay that includes an introductory paragraph, several body paragraphs, and a conclusion. The student has developed an intensely negative attitude toward writing and her frustrations fuel her general dislike for school. Many students who reach upper middle and secondary grades with barely adequate or inadequate literacy skills become the ‘at
risk’ students who exhibit confrontational behavior in school, have truancy issues, and contribute to high dropout rates and subsequent low graduation rates. The focus student exhibits confrontational behavior directly related to the stress and frustration of frequent writing assignments required in content area classes.

At the beginning of the 2013-1014 school year, the student acknowledged her lack of skill and her personal responsibility to commit to improvement or continue to fall progressively further behind. The idea for this action research project came about in a desire to more fully understand issues contributing to writing difficulty and to identify strategies and methods to improve the quality and quantity of text composition for struggling writers. As I considered the topic, it occurred to me that the student is able, of course, to think; but her critical thinking skills have not developed beyond the lowest order of skill: rote recall of explicit information. This realization led me to consider the student’s writing from the viewpoint of her level of thinking skill. In the past, I encouraged her to give me more detail to support her written responses rather than simply providing a blunt statement of fact. She always responded, “Miss, I don’t think that way.” Indeed she did not, and this lack of higher order thinking seemed to result in a severe poverty of words when generating written text and an inability to provide related detail or supporting evidence. I decided to conduct a single case study of my tenth grade student in order to measure changes in student writing following guided strategy instruction at the student’s instructional level for higher order thinking skills.

This topic is timely given the increased focus on the literacy skills of thinking, speaking, reading and writing brought about by implementation of the CCC. New curriculum standards have increased the complexity level of writing tasks assigned in
content classes and raised expectations for student performance. The topic is particularly relevant for content area teachers at the secondary level who are trained to teach content but have little time and limited knowledge of methods to provide effective intervention for struggling students. This topic is equally relevant for secondary students who lack the skills to meet the expectations for writing required by the CCC. Information regarding successful methods and strategies for improving student writing benefits both teachers and their students who are in need of remedial writing instruction.

This case study explores the relationship between critical thinking skills and student ability to create written text. Bloom’s cognitive domain is divided into six levels of critical thinking skill development: knowledge, comprehension, application, analysis, synthesis and evaluation. This case study focuses on a secondary student functioning at the lowest level of Bloom’s cognitive domain and asks how strategy instruction aimed at encouraging a higher level of critical thinking skill impacts the quality and quantity of text composition. Following Vygotzky’s theory of the Zone of Proximal Development in which a novice is guided and instructed by a more knowledgeable ‘other’, the student received guided strategy instruction at the second level of Bloom’s cognitive domain. Current literature supports the use of cognitive strategy instruction to facilitate independent mastery of a skill and indicates that critical thinking skill may be successfully taught to students at the secondary level. Student writing with strategy instruction was compared to baseline writing samples in two content area classes, English and Global Studies. In addition, I interviewed content area teachers and the student, gathered field notes and anecdotal notes and analyzed the complexity level of reading and writing assignments. The data I gathered revealed three themes: First, secondary students
functioning at the lowest level of Bloom’s cognitive domain experience a steadily increasing achievement gap between their independent comprehension level and the complexity of required reading and writing assignments in content area classes. Second, cognitive strategy instruction at the student’s instructional level has the potential to develop critical thinking skill and also improve the ability to create written text. Third, student motivation ultimately determines student success more than actual skill or ability to compose text. The study suggests implications important to struggling secondary students and content area teachers. Students exhibiting the lowest level of critical thinking skill can benefit significantly from participating in a classroom that cultivates higher order thinking and from receiving direct instruction in critical thinking skills. Intervention should target skills at the student’s instructional level to decrease student frustration and support attaining independent mastery of the skill. If no measures are taken to reduce the gap between independent skill and the level of academic expectation, student attitude and motivation continue to deteriorate and may be contributing factors to behavior issues, truancy and dropout rates. Providing differentiated instruction in content-driven classes is critical to foster student engagement and success. True differentiation is rare in secondary classrooms and depends on teacher willingness to re-structure their philosophies, classrooms and methods. It is imperative that content area teachers address skill deficits to facilitate long-term student success and provide differentiated instruction in the classroom to provide students with opportunities for immediate success.

**Theoretical Framework**

Nothing is more central to education and human interaction than language (Wolfram, 2000) and both oral and written language acquisition are rooted in a child’s early experiences with meaningful others in their family, community, and ethnic group.
Our primary oral language, acquired in our social and cultural family of origin, is an intrinsic part of any child’s identity and the foundation for all other learning. The impact of society and culture on cognitive development is a major focus of the research of Lev Vygotsky, a Russian psychologist who was a pioneer in his field in the early 20th century. Vygotsky’s theory of cognitive development (1978) asserts that in order to understand how we acquire knowledge, it is essential to study the whole process of learning (Lutz & Huitt, 2004). Cognitive Learning Theories are frameworks that define how information is absorbed, processed, and stored during the learning process. Two theories guide this action research study. Vygotsky’s theory of cognitive development guides direct intervention with the student according to his proposed Zone of Proximal Development applied to the acquisition of new skills. Bloom’s Taxonomy of the cognitive learning domain is utilized to measure the cognitive complexity of assigned writing tasks and to identify the student’s current level of critical thinking skill.

Vygotsky’s socio-cultural approach to cognitive development maintains that higher order mental processes originate in the social process of the individual learner (McLeod, 2007). We are born with elementary mental functions that require no learning for their use but higher mental functions develop through socio-cultural interaction. This view supposes that as children learn, they develop cognitive strategies to retain, organize and make sense of information and these strategies are specific to the socio-cultural environment of the child. In the home culture, for example, lists and mnemonics may be used to retain information. In the academic culture, a variety of strategies, graphic organizers and note catchers are utilized to retain and access newly acquired knowledge. Two dominant principles of Vygotsky’s theory of cognitive development are the More
Knowledgeable Other (MKO) and the Zone of Proximal Development (ZPD). The MKO refers to someone who possesses a higher level of knowledge than the learner and assists the learner in acquiring that knowledge. The MKO may be a peer, a family member, a teacher, or even a digital source. The important element is that skill and knowledge are passed from an expert to a novice in an apprentice-type relationship. Vygotsky characterizes three zones that describe the skill or knowledge level of the learner. In level one, the independent level, the learner possesses the knowledge and skill to complete a task with no assistance or guidance. The focus student is able to independently complete critical thinking tasks at level one of Bloom’s cognitive domain (information recall). Vygotsky’s level two addresses skills too difficult for the learner to independently complete though the learner may master the skill with guidance and instruction from a more knowledgeable other. This level, the zone of proximal development, is the instructional level at which new skills can be taught and mastered through repetition as guidance is gradually removed to foster independence. Guided strategy instruction occurred in the student’s zone of proximal development and focused on skills contained in level two of Bloom’s cognitive domain (summarizing and identification of main idea/supporting detail). Vygotsky’s third level of development is equivalent to the frustration level in which a learner does not have the necessary background knowledge to learn the new skill without experiencing a level of frustration that interferes with the ability to learn.

The terms critical thinking skill and cognitive thinking skill are used interchangeably in current literature. Bloom (1956), an educational psychologist, created the Bloom’s Taxonomy to promote higher level thinking in education as opposed to rote
memorization of facts. Bloom’s hierarchical classification of thinking skill identifies three domains of learning: cognitive (knowledge), affective (attitude or self), and psychomotor (manual skills). The cognitive or mental domain is divided into six levels that quantify the complexity of critical thinking skill from one (low) to six (high). The six levels of Bloom’s cognitive domain include knowledge, comprehension, application, analysis, synthesis, and evaluation. Knowledge, the lowest level of skill, requires the student to recall explicit information. At level two, the student demonstrates comprehension by identifying main ideas and supporting details, summarizing information, creating outlines and discussing or explaining a concept. The ability to apply knowledge enables the student to use knowledge to solve problems, illustrate examples, or demonstrate how something works. At level four, analysis, students are able to identify patterns, recognize trends, and organize related and non-related information. Skills at the top two levels, synthesis and evaluation, include the ability to infer implicit information, combine ideas to create a new idea, make judgments, and render critique. As previously noted, my focus student operates at the first level of knowledge recall and most grade ten writing assignments require skills in the third and fourth levels with occasional tasks requiring skill in the top two levels.

**Research Question**

The goal of this study is to measure changes in student writing following guided strategy practice at the student’s instructional level aimed at promoting the development of critical thinking skills. Given that expectations for writing at the secondary level require mastery of skills in the upper four levels of Bloom’s cognitive domain, this action research project poses the question: How is the quality and quantity of written text
composition impacted by guided strategy instruction of critical thinking skills at the student’s instructional level?

**Literature Review**

Prior to initiating this action research case study, a review of the literature was conducted to identify possible factors contributing to the issues experienced by adolescent struggling writers and to determine strategies and approaches to improve writing proficiency. Three primary themes emerged from the literature and will be discussed in this review. The first theme concerns factors that contribute to the difficulty of the writing task itself. The writing process is a cognitively complex task that requires well-developed thought and organization. The task is even more complicated for struggling students with lower order critical thinking skills. The second theme addresses the viability of directly teaching critical thinking skills to adolescents. The third theme investigates the role of cognitive strategy instruction in writing intervention.

**Factors Contributing to the Difficulty of the Writing Task**

The ability to read, write and speak literately is fundamental to achieving and maintaining equity in modern society. What constitutes literacy is determined by the context in which the reading, writing and speaking occurs. For the purposes of this paper, literacy is defined as the ability to successfully engage in the literacy events required in academic settings and expected in the workplace. Literacy rates generally and writing scores specifically are at an alarmingly low level according to current data. The National Assessment of Educational Progress (NAEP) reported the 2011 results of the nation’s first large-scale computer-based assessment of writing proficiency measuring student
achievement as either basic, proficient, or advanced. The design of the writing assessment tasks required students to communicate to various audiences and to write for various purposes related to academic and workplace needs. Only 24% of eighth and twelfth grade students performed at a proficient level with roughly 53% performing at the basic level and only three percent demonstrating advanced skill. Asian and White students outperformed Black, Hispanic and American Indian students while female students outperformed males (NAEP, 2012). The lowest quartile, those not meeting either proficient or even basic standards, is the very definition of a ‘struggling writer’. Colleges and universities are filled with students whose rudimentary literacy skills hinder their access to the depth of knowledge required to complete an advanced course of study. According to the Executive Summary of California’s Intersegmental Committee of the Academic Senates (2002), one in five college students require remedial intervention in undergraduate writing classes where the most frequently assigned writing tasks involve the ability to analyze information and synthesize information from a variety of sources. The Executive Summary document clearly delineates the skills expected of entering freshman across all academic disciplines: “reading, writing, listening, speaking, critical thinking, use of technology, and habits of mind that foster academic success” (ICAS, 2002; p. 2). Two of these skills, the ability to think and to write, are interrelated skills and are the focus of a prodigious amount of current research related to literacy skills necessary for success in both the academic setting and in the workplace.

Reading and writing are both cognitive processes that involve constructing meaning from text. Good readers and writers engage in a number of behaviors or habits during this process. Good readers demonstrate the ability to visualize characters and plot
activity; actively question the text and seek clarification; make connections to their own experience, other texts, or the world; make predictions during reading; draw inferences; determine important details; and synthesize information. The effectiveness of these skills is well documented in research and is interchangeably known as The Seven Habits of a Good/Successful/Highly Effective Reader. The habits of a good writer are not as clearly defined. A plethora of writing rubrics and genre-specific process strategies support the importance of organization, planning, proper use of grammar and conventions, developing voice in writing, and writing for a particular purpose or audience. The writing task requires numerous high-level skills including retrieving and organizing ideas, translating thoughts into words, the mechanics of producing written text, mastery of genre-specific knowledge, comprehension of an assigned literary topic, familiarity with the proper conventions of writing, composing text, revision, and self-regulation to manage all of these aspects of the writing task (Graham & Harris, 2000; Graham, Harris, & Mason, 2005; Olive, Kellogg, & Piolat, 2007). Most if not all of these skills exist outside the independent mastery range for struggling writers. These high-level skills involve the management of numerous dynamic cognitive processes and application of higher order thinking processes.

According to the seminal work of Flower & Hayes (1981), the “process of writing is best understood as a set of distinctive thinking processes which writers orchestrate or organize during the act of composing” (p. 366). The cognitive processing demands of the writing task place specific demands on the brain’s working memory and executive center. Working memory differs from short-term memory in that items are available for retrieval from short-term memory for a longer time than from the brain’s working memory bank.
Working memory is the active, transient part of one’s memory in which information is taken in and processed for immediate use such as remembering a telephone number to be dialed or processing and immediately following a set of verbal directions. The more developed one’s working memory, the more items one can keep in mind when completing a task. Working memory consists of the phonological loop responsible for interpreting and storing verbal (auditory) information and the visuo-spatial sketchpad responsible for interpreting and storing visual images (Baddeley, 2001). In effect, the phonological loop is the ‘mind’s ear’ and the visuo-spatial sketchpad is the ‘mind’s eye.’ Baddeley asserts that the central executive function of the brain, ultimately responsible for comprehension and analysis, is the supervisory element that enables the working memory system to be selective about which stimuli to regard or disregard. During the writing process, the central executive integrates information from the two areas of working memory and also draws on information held in the long-term memory database. As students develop increasingly complex thinking and writing skills, the demands on working memory and the executive center increase accordingly. Therefore, the cognitive demands are different for a beginning writer than for a writer in the advanced stage of writing development.

Kellogg (2008) proposes three stages of writing development: (1) the initial stage of knowledge-telling in which the early writer simply restates his thoughts (2) the intermediate stage of knowledge-transforming in which the text produced is a synthesis of the writer’s thoughts and (3) the final stage of knowledge-crafting in which the writer crafts language relative to his knowledge and with the reader in mind. According to Kellogg, the third stage describes a very mature writer, a level not attained until late
adolescence or early adulthood. At levels two and three, there is high cognitive demand on working memory and the greatest obstacle in progressing from the most basic knowledge-telling level is the limitation of the working memory’s central executive function (Kellogg, 2008; Vandenberg & Swanson, 2007). Though new writers just beginning at level one should not experience increased cognitive load, adolescents who are functioning at level one may certainly experience an increased cognitive load given their lack of cognitive skill coupled with the high cognitive demands of the writing process. Kellogg (2008) posits that because the central executive function does not fully mature until late adolescence or early adulthood, it is imperative to reduce the demands on the central executive by training developing writers to utilize certain skills automatically, freeing the central executive to control other cognitive processes. The implications of this research validate the use of cognitive strategy instruction to attain some level of automaticity in the writing process in order to free the student to focus on generating and producing text. The ability to think critically and to generate concise, coherent text is not confined to the halls of academia; these skills are equally critical for career success at all levels.

Despite the fact that Americans today are more educated and literate than previous generations, many employers report they are not able to find competent workers with sufficient reading, writing, math, and thinking skills required in the workplace (Kirsch, Jungeblut, Jenkins, & Kolstad, 2002). There is a growing consensus that in today’s information-driven, high-tech society, employees are expected to be able to analyze and utilize new information and to learn and apply new skills relevant to their employment – all higher order thinking skills. Where once the education system prepared
graduates for manufacturing and industry-related employment requiring repetition of the same task, students today must be prepared for high-tech employment in a global marketplace in which higher order skills are a necessity (Haywood, 2004; Marin & Halpern, 2010). The economic environment and nature of the global marketplace are fluid, keeping pace with advances in technology. Haywood (2004) predicts that high school graduates can expect to not simply change jobs over the course of their careers but to entirely change careers a number of times during their wage-earning years. Each career change will require a new skill set, a new domain of knowledge, and the ability to transfer previous experience to a new environment. Job candidates who are able to quickly analyze and synthesize information, view things from multiple perspectives, and make educated judgments will gain the competitive edge in the job market. Karlsson (2009) studied four occupations (construction worker, truck driver, shop assistant, and preschool teacher) and found reading, writing, and speaking to be significant factors in all four occupations despite the fact that three of the four would traditionally be considered blue-collar or “nonliterate” (p. 59) occupations. The importance of these skills varied depending on the worker’s specific job description. People oriented occupations required more variability among literacy skills compared to task oriented occupations which more often required workers to complete repetitious literacy acts with few variables such as maintaining documentation (Karlsson). These findings emphasize the role education should play in preparing adolescents for life after graduation however, statistics continue to highlight a lack of skill in the nation’s young adults.

In 2002, the U.S. Department of Education published the findings of the National Adult Literacy Survey that tabulated literacy statistics for a diverse cross-section of
Americans age 16 and older. Of the over 26,000 adults surveyed, roughly twenty-two percent scored at the lowest level for reading, writing, and math skills related to daily living activities and roughly twenty-seven percent scored at the next highest level indicating still quite limited skills (Kirsch et al., 2002). The correlation between basic literacy skills and individual opportunity is extremely high and the onus is on America’s teachers to prepare students for life after graduation. Though reading, writing, and thinking are equally crucial to success, reading intervention seems to command the most direct attention during the school day. Writing and critical thinking, though acknowledged to be critically important, do not receive the same instructional time and attention. Writing and critical thinking are closely linked, complex tasks requiring the same type of cognitive skill necessary for successful problem solving (Kellogg, 2008). As such, it is critical that direct instruction and intervention be available across content classes especially for secondary students who struggle with rapidly increasing demands to produce quality, thoughtful text in all classes.

Struggling writers share a common set of characteristics that are closely tied to inability to activate high-level thought processes. Poor writers tend to write in short sentences and think only in terms of concrete knowledge and information: the ‘who’ and ‘what’. They do not consider the ‘why’ or the implications of ‘when’ or ‘where’. The poorest writers have limited self-regulatory strategies, put minimal effort into planning, and do not move back and forth in the writing process to edit and make revisions (de Milliano, van Gelderen, & Sleegers, 2012; Graham & Harris, 2000). Conversely, good writers possess more knowledge of the process of writing, are familiar with various genres of writing, understand and utilize voice when writing, have few issues with
conventions, implement planning and organizational strategies, independently monitor their writing, have a command of language in order to translate ideas into words, and are able to present their ideas in a concise and cogent manner. Perhaps most importantly, good writers demonstrate self-regulatory behaviors and the intrinsic motivation necessary to engage in the entire writing process from first draft through last revision. Though reading and writing intervention typically exists for students in kindergarten through eighth grade, high numbers of students are promoted to the upper grades lacking the skills necessary for academic success. Though the Common Core Curriculum outlines very specific goals for writing with a focus on high-level thinking skills, content area teachers in the upper grades often focus on teaching content only and generally do not possess either the time or the expertise to teach remedial writing and thinking skills to struggling secondary students. However in response to current trends, pedagogical approaches at the secondary level do tend to include less lecture, more interactive learning, technology integration, and use of instructional strategies when appropriate. Instructional strategies, also known as cognitive strategies, are tools that support student learning by providing a structure or procedure for completion of a complex task. This support allows students to practice and internalize the steps for eventual independent completion of the task. The majority of strategies taught by content teachers are aimed at improving comprehension, increasing organization, or defining a set of procedural steps for a domain-specific assignment. These strategies rarely lead to improved critical thinking or writing skills when used in isolation with no extended instruction regarding why the strategy is used and when it should be implemented. While Conley (2008) reports there is limited research regarding the use of cognitive strategies in content-driven
classrooms at the secondary level, there is an extensive body of research regarding the success of cognitive strategy instruction with diverse populations of all abilities. As content complexity increases in upper grades, so too does the need for intervention. Research supports the use of cognitive strategies in writing intervention and makes the critical point that meaningful intervention for improving writing and thinking skills are dependent on developing a student’s strategic knowledge, academic knowledge, and motivation (Alexander, Graham, & Harris, 1996; Harris, Graham, & Mason, 2006; Olson & Land, 2007). Students must be given the tools to be successful including mastery of a variety of strategies utilized for a variety of complex purposes, motivation to engage in the complete writing process, and comprehension of content-related material to be addressed in the writing task. Higher order critical thinking skills are a crucial component of the comprehension process in which writers come to understand the material well enough to be able to draft meaningful, responsive text related to the assigned topic.

The Validity of Teaching Critical Thinking Skills to Adolescents

The ability to think critically encompasses not only higher order thinking processes beyond the concrete but also the ability to activate socially relevant critique/criticism. There is no widely accepted definition of critical thinking among psychologists or academics (Freeman, Mathison, & Wilcox, 2012; Rezaei, Derakhshan, & Bagherkazemi, 2011); however, common usage of the term recognizes critical thinking as logical, rational thought that is not hindered by bias or preconceived knowledge. This type of recursive thinking leaves room to adjust personal views and formulate opinions. For the past three decades, critical thinking has been the focus of numerous reports and
initiatives calling on the education system to address these skills within the framework of the regular curriculum. Historically, the main objective of education in the United States was reading, writing, mathematics, and the memorization of facts. The focus was on gaining stores of knowledge and the role of the teacher was to disseminate information to the student (Bransford, Brown & Cocking, 2000). Today, teachers are called upon to teach students to ‘think critically’, engage in ‘higher-level thinking’, or learn the skill of ‘logical reasoning.’ The Common Core Curriculum explicitly tags (in yellow) interconnected literacy skills deemed crucial for high academic and career achievement. These College and Career Readiness skills embody the higher order skills involved in the ability to think critically: the ability to connect, analyze, communicate, interpret, criticize, and explore issues from various perspectives. Critical thinkers demonstrate a number of characteristics that are key to success including the ability to recognize what constitutes good thinking, identify relevant issues, consider alternate viewpoints, distinguish between fact and opinion, justify decisions, anticipate consequences relative to action, assume an objective stance, formulate relevant questions, make inferences, recognize preconceptions, listen objectively to diverse viewpoints, and accept criticism (Halpern, 2003; Birjandi & Begherkazemi, 2010). There is no consensus among researchers as to whether or not critical thinking is a skill set that can be ‘taught’ to students though there is agreement as to the type of student that benefits from intervention and the type of instruction that will promote development of higher order thinking skills.

Educator opinions vary regarding the teaching of critical thinking skills to students of varying abilities and a considerable body of educational research has focused on the subject of critical thinking skills instruction (Torff & Warburton, 2005; Zohar &
Though the preponderance of research supports the benefit of teaching critical thinking skills to students of all abilities, teacher opinions of pedagogy vary based on the type and length of their teaching experience. Zohar et al. (2001) interviewed teachers to gather data regarding differences in their instructional goals for both low- and high-achieving students. Forty-seven percent of the 40 secondary teachers interviewed felt that explicit instruction using high-level thinking strategies was not effective for low-achieving students. This more traditional view of instruction presupposes that knowledge is gained in a hierarchical fashion and that high-level learning cannot be effective without prerequisite lower-level skills. Similarly, Warbuton and Torff’s (2005) survey of practicing secondary teachers revealed teacher opinion that critical thinking activities are more appropriate and beneficial for high-level learners than low-level learners. In his 2006 study, Torff extended his research to document the philosophies of a group of expert teachers and in-service teachers regarding critical thinking instruction for high- and low-advantage learners. Torff found that expert teachers were generally more favorable toward use of critical thinking activities for both groups of learners while in-service teachers with a similar amount of teaching experience were more likely to favor differentiation between high and low critical thinking activities based on their perceived views of learner abilities. Despite these disheartening findings, a growing body of research supports the use of high-level critical thinking activities for learners of all abilities and explores effective instructional practices to support this philosophy.

Researchers have found that critical thinking is an acquired skill with a high probability for change under the right circumstances (Beyer, 2008; Haywood, 2004). The
right circumstance takes into consideration both the environment of the classroom and the expectations of classroom teachers. Zohar & Dori (2003) report the results of four studies that found low-performing students benefited from engaging in higher order thinking tasks equally to their high-achieving peers. These findings are significant in the field and should inform change in teacher’s preconceptions about student ability and teacher practice in heterogeneous classrooms. Rather than teaching students what to think and know, emphasis should be placed on teaching all students how to think from different perspectives. Willingham (2007) argues that despite two decades of calls to teach critical thinking to students and despite the use of scripted programs sold to promote critical thinking in students, critical thinking is not a scripted set of skills that can be prescriptively applied in any situation. Students gain the ability to think critically through repeated purposeful exposure to high-level content presented in a classroom environment that promotes questioning, discussion and thought. Willingham (2007) further asserts that critical thinking success is predicated on mastery of domain-specific knowledge as it is impossible to think critically about a topic that one knows little or nothing about. This view speaks to individual teacher practice and calls for pedagogical changes to create an atmosphere in which the development of critical thinking skills is likely to occur and in which there is a scaffolding of comprehensive content knowledge. Beyer’s (2008) review of current literature on the teaching of thinking skills advocates the explicit teaching of thinking skills following a five-step instructional process. Beyer’s use of the term ‘thinking skill’ refers to higher order critical thinking skills including but not limited to comparison, classification, sequencing, predicting, decision making, problem solving, analysis, interpretation, identifying point of view, and determining credibility. Beyer’s
five step instructional process includes many of the same components present in other
evidence-based strategy instruction models: introduction of the skill strategy, explanation
of when and how to implement the strategy, teacher modeling, guided practice, feedback
and coaching, and eventual independent use of the strategy. Beyer (2008) and
Willingham (2007) agree that skilled thinking does not develop as a result of incidental
learning or limited exposure through observation; rather, development of higher order
thinking skills is the result of repeated, systematic, explicit instruction. Purposeful
instruction allows the student to internalize the skill through guided practice in order to
access the skill for future independent use. Interestingly, the research of Cotter and Tally
(2009) found no improvement in critical thinking skills when students simply completed
the critical thinking exercises contained in their textbooks without direct instruction that
also teaches students the purpose of the strategy and when to implement the strategy.
Clearly there is widespread acknowledgement of the crucial nature of critical thinking
instruction in today’s classrooms though research suggests that there is a perceivable gap
between critical thinking in theory and critical thinking as a commonly implemented
pedagogy (Freeman, Mathison, & Wilcox, 2012). The reasons for this gap are varied and
range from lack of knowledge about ways to implement critical thinking instruction in
the classroom to lack of instructional time to commit to the development of thinking
skills given the demands of covering increasing amounts of content in an instructional
year.

Pressley and Harris (1990) recommend teaching critical thinking skills in content-
based classes rather than electives. The complexity of reading material in content-driven
classrooms lends itself to higher order though processes in order to synthesize and
evaluate large volumes of content as well as make meaningful connections across content areas. Beyer (2008) agrees and gives two reasons to support his position: it promotes an increased understanding and retention of the subject matter for the specific content-based class and students are called upon to use targeted skills and strategies for authentic purposes related to the objective of the content-based lesson. Unfortunately, instruction in many content-based classrooms tends to be lecture-based which is inherently one-sided. This approach encourages students to be passive learners and leads to lack of participation and a marked lack of motivation. Applebee, Langer, Nystrand, and Gamoran (2003) advocate a dialogic method of instruction and found that students of all achievement levels learned to internalize and transfer skills independently when their classroom literacy experiences utilized a discussion-based approach with an expectation of high academic performance. Research shows that the majority of questions posed in secondary classrooms are low-level questions not designed to promote high-level thinking or responses. The posing of higher order questions is critical to engage students and encourage the development of critical thinking skills (Willingham, 2007). Teachers should strive to promote a general atmosphere of thoughtfulness and inquiry in the classroom. The Socratic Seminar is a familiar, evidence-based teaching strategy using high-level questions designed to promote critical thinking, communication, and cooperation among students. The goal of the Socratic Seminar is not to answer all questions definitively but rather to generate more questions, facilitating a deeper level of student-directed learning. Etemadzadeh, Seifi, and Far (2013) examined the Socratic method of questioning as a tool to increase the critical thinking skills of second language learners and found that lack of student participation could be attributed to lack of
engagement and knowledge rather than linguistic incompetence. The questions teachers pose to students give cues to learning objectives, stimulate student interest, and motivate students to participate and assume responsibility for their own learning. These findings provide validation that question-based dialogic instructional approaches can provide students with a knowledge base to draw upon when composing written texts. However, the cognitive demands of the writing and thinking process are great and many students, particularly those with learning difficulties, may find it beneficial to utilize cognitive strategies to manage the demands of the writing process.

**The Role of Cognitive Strategy Instruction in Writing Intervention**

Cognitive processing, or the act of thinking, involves conscious mental activities such as attention, knowledge acquisition, language production, memory, logic and reasoning. People are born with a genetically determined intelligence quotient (IQ) but can acquire and develop higher levels of cognitive skill. Haywood (2004) emphasizes that intelligence alone is not sufficient to ensure effective learning but that cognition and motivation play a prominent role in the learning process. Haywood distinguishes between intrinsic and extrinsic motivation and finds many reliable conclusions regarding the superiority of intrinsic motivation in students: high achievers are more likely to be intrinsically motivated, motivated students learn more efficiently and retain more, intrinsically motivated students are persistently hard workers who pursue learning on their own, the importance of intrinsic motivation correlates with increased task difficulty, and intrinsic motivation has a positive correlation to age, IQ, and socioeconomic status. As a society, we have become dependent on instant gratification therefore classroom
tasks requiring sustained attention and effort generally do not stimulate motivation and excitement in students. The writing process, with its inherently heavy cognitive demands, is a task that is completely overwhelming to many low-achieving students. The good news is that research supports the view that cognitive skills as well as writing skills can improve with sustained practice (Kellogg, 2008).

Emig (1971) conducted seminal research tracing the behaviors and processes of twelfth grade students while they were writing finding that student ideas evolved throughout the process and that this evolution of ideas was a recursive, complex cognitive and linguistic process. This research was fundamental in explaining the cognitive nature of the writing process as well as initiating a wealth of research on the nature of effective instruction. As previously discussed, it is absolutely critical that secondary students have a comprehensive understanding of the topic to be addressed in a writing task. Students who have no knowledge of the subject will have no words with which to write about the subject. Classrooms should promote purposeful conversation between peers and between students and the teacher. In order to build necessary knowledge, students must feel free to appropriately express their opinion, explore personal views, pose questions, and analyze and evaluate information. Content presented in this manner gives students the ideas and views that are the basis of an interesting, well-informed writing piece. Teacher behavior should allow students room to develop their own ideas, encourage students to take a position, utilize questioning techniques that promote evaluation and analysis, encourage students to challenge the text and view things from multiple perspectives, and promote constructive peer interaction (Applebee et al., 2003). Despite being exposed to a comprehensive knowledge base, many students continue to struggle with the process of
organizing that knowledge, generating ideas, transforming ideas into words, generating text, and revising text to ensure fluidity and clear thought. Cognitive Strategy Instruction is an evidence-based teaching tool for managing the cognitive demands of writing (De La Paz, 2007).

Strategies are tools that help students achieve a larger, more complex task. A given strategy, whether simple or complex, has a specific goal and controls a process that leads to a performance outcome. We all use strategies without conscious thought: lefty loosey, righty tighty; ‘i’ before ‘e; except after ‘c’; or setting a reminder alarm on a smartphone. Instructional strategies used in the classroom are used to teach domain-specific skills or knowledge with a focus on internalizing the strategy for future independent use. Some instructional strategies activate cognitive processes that elevate student thinking and learning such as questioning, summarizing, activating prior knowledge, making connections, and synthesizing information (Conley, 2008). Cognitive Strategy Instruction (CSI) relative to the writing process, serves three major purposes: to simplify and organize the complex planning, writing and revision tasks; to define a goal for the specific writing task; and to provide a concrete, visible representation of the mental processes involved in planning, composing and revising (Santangelo, Harris, & Graham, 2008). CSI has proven to be beneficial in helping students navigate the challenge of activating and managing the strategic processes good writers employ. There are consistent differences between proficient writers and poor writers. Good writers utilize strategies to generate ideas and organize information, consider their audience, write for a specific purpose, plan, evaluate their work product, and make substantive changes to their work. Substantive revisions involve thinking about the reader and
Poor writers do not use strategies or utilize somewhat familiar strategies ineffectively, do not plan, do not critically evaluate their work product, and make only surface changes during the revision process. Surface changes include revisions to spelling or punctuation only with no attention to intended meaning. Kellogg (2008) asserts that composing a lengthy, complex text is a high-level cognitive task equal to becoming an expert at a comparable high-level cognitive task such as learning a new language or learning to play violin. Deliberate, sustained practice is required using interventions that train the student how to complete the procedure repeatedly in future contexts rather than simply instructing the student in how to complete the procedure in one isolated situation. As discussed earlier in this paper, the writing task involves working memory, long-term memory, and the brain’s central executive function. Proper training in the use of strategic tools allows students to achieve automaticity in some procedural elements of the task thereby freeing the brain to focus on more complex cognitive tasks such as generating ideas and transforming ideas into words to convey an intended meaning. Research suggests that the CSI can improve student competence and confidence in reading, writing, and thinking (Olson & Land, 2007) and has been found to be effective with diverse populations of learners.

Properly implemented, the CSI approach helps struggling learners become more efficient, independent learners with the ability to access more complex thought processes. Harris and Graham (1996) devised a model of implementation that has been used effectively with Cognitive Strategy Instruction. This model, Self-Regulated Strategy Development (SRSD) is a research-validated instructional template to follow when
teaching students how to utilize a specific instructional strategy while emphasizing the use of thinking skills and self-regulatory behaviors to enhance student performance. The goal is eventual independent, automatic use of the strategy or process. Santangelo, et al. (2008) explain the six stages of the SRSD model: (1) activate and develop the student’s background knowledge to ensure the student understands how and why the targeted instructional strategy will be used (2) discuss the purpose and benefit of the instructional strategy and ensure students are motivated to learn the new strategy (3) model exactly how to implement the new strategy, providing students time to continue discussion of the pros and cons of the strategy (4) memorize the steps of the instructional strategy so students are later able to utilize it independently (5) support student use of the instructional strategy through guided practice, giving constructive feedback and reinforcement and (6) students achieve automaticity and are able to independently transfer use of the instructional strategy to additional academic tasks. When developing background knowledge, the primary focus is to make sure students learn and understand the instructional strategy that will be used including the name of the strategy, its purpose, and when it should be used. It is crucial at this point that students are taught any prerequisite skills that are necessary. In stage two, student motivation is encouraged and the component steps involved in the strategy are introduced. In the modeling stage, teachers may utilize a think-aloud protocol to demonstrate the process. Students should then be given a second opportunity to discuss their positive and negative feelings about the strategy. In stage four, students memorize the strategy using mnemonics or other techniques to ensure they are able to recall the steps independently. In stage five, the teacher withdraws from her role as guide and allows the students to assume more
responsibility for the process. In the final stage, students are ultimately responsible for utilizing the strategy independently. This includes recognizing when that particular strategy is appropriate and following through with the procedural steps involved. The amount of repetition necessary is dependent on student levels and abilities.

Numerous research studies conclude that Cognitive Strategy Instruction implemented with the Self-Regulated Strategy Development model leads to significant improvements in students’ writing knowledge, writing quality, writing approach, self-regulation skills, and motivation (de la Paz, 2007; Harris, Graham & Mason, 2006; de Milliano et al., 2012). The most key component is consistent, direct instruction. Research also documents the benefit of using CSI and SRSD with diverse learner populations including adult literacy learners (MacArthur & Lembo, 2008), adolescent learners performing in the lowest quartile for writing achievement (de Milliano et al., 2012), English language learners (Olson & Land, 2007), and mildly mentally retarded learners (Guzel-Ozmen, 2006). CSI and SRSD go far beyond the simple use of an instructional strategy as a tool for organization. These strategies include explicit instruction in self-regulation components including goal setting, self-assessment, self-instruction, self-reinforcement, use of imagery and managing the writing task and environment (Santangelo, et al. 2008). Strategy instruction is a beneficial tool in teaching practice and care should be taken that a selected strategy accomplishes the intended goal and is appropriate for the assigned task. It is imperative that teachers introduce strategies with an air of enthusiasm, encouraging students that their efforts will be worthwhile. However, use of instructional strategies should not be viewed by students as a quick fix for a complex problem. No quick fix exists. Writing is a complex, difficult process that
requires sustained practice, a strategic plan, and a full commitment to the process to achieve success.

**Method**

**Context**

This action research study is a case study of a tenth grade student in a large urban school district. The student’s core classes are taught in an integrated setting, co-taught by a general education teacher and a special education teacher. Half of the students in the integrated class receive educational supports or modifications as stipulated in an Individualized Education Plan (IEP) and the other half are general education students. All students are on track to graduate with Regents diplomas provided they pass the minimum number of New York State Regents examinations that include Comprehensive English, one Mathematics exam, Global History, US History, and one Science exam. All exams with the exception of math and science include writing sections requiring high-level critical thinking skills. The New York State District Report Card for 2011-2012 indicates this urban campus has a student population of fewer than 750 students in grades K-12. The school is structured on an Expeditionary Learning model with highly qualified teachers and a statistically low teacher turnover rate. Demographically, the student population is composed of 75% Black/African American, 14% White and 8% Hispanic/Latino. 72% of students qualify for free or reduced lunch and 2% are classified as Limited English Proficient. Research for this case study took place in an integrated tenth grade English class and first year Global Studies class. The Global Studies course is a two-year course with a Regents exam requirement at the end of year two.

**Participants**
Teachers.

Kate (a pseudonym) is a general education English teacher with an undergraduate concentration in writing and a master’s degree in instructional technology. Kate has 14 years teaching experience, all in this urban school district. She has co-taught in an integrated classroom for 8 of the 14 years and has taught advanced placement classes as well. John (a pseudonym) is a general education Global Studies teacher with an undergraduate degree in Economics and a master’s degree in Social Studies education. John has nine years of teaching experience in the district, three as a substitute and six years in his current position. In each of these integrated classrooms, the general education teacher is responsible for planning lessons, choosing materials, and grading student work. In the English classroom, Kate and the special education teacher share the teaching responsibilities though Kate does provide the majority of the classroom instruction. In the Global Studies classroom, John delivers all instructional lessons and the special education teacher functions in a support role. In both classes, the primary responsibility of the special educator is to ensure student accommodations and modifications are met during instruction and to provide additional learning support as needed.

Student.

The focus of this case study is a blind tenth grade student, Nicole (a pseudonym), whose primary reading and writing medium is Braille. Nicole learned to read with large print but began learning Braille in third grade when she experienced a significant reduction in vision. Nicole’s vision in the left eye is nil, with hand movement only in the right eye. In the academic setting, she has the support of a Teacher of the Visually Impaired, a 1:1 paraprofessional, and an Orientation and Mobility Specialist. Nicole
enjoys math and science and passed the Earth Science Regents exam in ninth grade. Nicole’s independent reading level is grade five and her instructional reading level is grade six. She is frustrated by much of the grade level content she reads in school, especially in Global Studies. Her Braille reading fluency and speed continue to show consistent improvement however, her independent reading comprehension level decreased one grade level in the past two years due to a lack of independent reading practice outside of school. Nicole struggles with writing and is experiencing significant frustration in content area classes that have high reading and writing demands, particularly English and Global Studies. She has failed to pass the US History Regents exam twice because the writing section required a thematic essay and a DBQ essay, both of which Nicole left largely incomplete. Nicole has a quick wit and enjoys music, reality television, and physical activity. She would love to be able to participate in cheerleading and modified softball. Nicole has many school acquaintances but few close friends outside her family. Her tendency to respond to others in an abrasive manner impacts her ability to form and maintain relationships within her peer group. Nicole’s attitudes toward and interactions with classroom teachers are greatly influenced by the length and frequency of reading and writing assignments required in that class.

**Researcher Stance**

I am a Teacher of the Visually Impaired (TVI) and certified Orientation and Mobility Specialist with four years of experience teaching in this urban school district. I will soon complete my master’s degree in Literacy Education for grades 5-12 in order to satisfy New York state requirements for professional certification. I have worked with Nicole all four years that I have been employed by the district. My role as a TVI is
complex in that I maintain long-term involvement with students and their families, serve as liaison between students and various state and community agencies and address student needs included in the Expanded Core Curriculum. In the academic setting I prepare tactile materials and Braille texts, provide assistive technology instruction, and directly support Nicole in math and science class for Nemeth Code instruction and to ensure accessibility to class content. Because of the nature of my job, I am in a unique position to observe both Nicole and her classroom teachers consistently throughout the academic year. When I am in class with Nicole, I typically function in a capacity that Mills (2011) defines as a privileged, active observer “moving in and out of the role of teacher, aide, and observer” (p. 85). For the purpose of this study, I will function in the capacity of passive observer focusing only on data collection to maintain a more objective stance in order to gain insight about student capabilities and teacher pedagogy.

**Method**

Prior to beginning direct instruction with Nicole, the following data was gathered to inform my analysis and interpretation of my research: independent, instructional and frustration reading levels were determined by administration of the Qualitative Reading Inventory 5, a measure of critical thinking skill was obtained based on the Cornell Test of Critical Thinking Skills Level X, and baseline writing samples of student work were collected in English and Global Studies. Informal interviews were conducted and transcribed to gather data from Nicole’s English and Global Studies teachers. Questions solicited teacher impressions related to the performance and skills of all students in the class, Nicole’s classroom engagement and Nicole’s writing competence compared to the class as a whole. Three informal interviews were conducted with Nicole regarding her
attitudes toward, knowledge of and formative experiences with writing. I gained insight into the student’s knowledge of the writing process, her perceptions of the skills required to create quality text, and her motivation and commitment to improve the quality of her writing. During strategy instruction, anecdotal field notes were used to track student attitudes and impressions of assigned writing tasks and implemented strategies.

During the research phase, I collected and analyzed measurable data from a variety of sources. Bloom’s hierarchy of critical thinking skills (Appendix A) was utilized to identify the complexity level of assigned writing tasks in English and Global Studies. I collected field notes to document whether teacher inquiries in class encouraged students to engage in higher or lower order thinking as determined by Bloom’s hierarchy of skills in the cognitive domain. English and Global Studies classes were observed six times each and assigned reading passages and writing assignments were collected for a four-week period. The reading level of English and Global Studies reading passages was calculated by entering 100 words of text from each passage into a Microsoft Word document and activating the spell check function. This generates Readability Statistics including a Flesch-Kincaid Grade Level estimate. Longer reading passages were calculated by taking an average reading level from 100 word passages at the beginning, middle and end of the text. Nicole received direct strategy instruction aimed to encourage development of higher-level critical thinking skills and to improve the quality and quantity of text production on writing assignments for English and Global Studies. Strategy instruction focused on summarizing information and identifying main idea and supporting detail in assigned reading passages. Both strategies require skill at the student’s instructional level of critical thinking skill according to Bloom’s hierarchy and
were chosen because they will immediately benefit the student with current class assignments. Four Global Studies passages were summarized using guided instruction to prepare Nicole to complete related writing assignments. Four English assignments were organized by main idea and supporting detail to prepare Nicole to complete writing assignments. Nicole’s written responses were compared to her baseline responses and scored according to a 3+3 point writing rubric (Appendix B) measuring the number of words per essay, sentences per paragraph, words per sentence, clarity of ideas presented, word usage and rhythm and flow of the writing piece. Each of these areas was chosen because they support the goal of improving both the quality and quantity of student writing.

**Quality and Credibility of Research**

Mills (2011) refers to Guba’s (1981) criteria for assessing the trustworthiness of qualitative data. According to Guba, trustworthiness of a study may “be established by addressing the following characteristics of a study: credibility, transferability, dependability, and confirmability” (p. 115). The nature of my job allows me to observe the student’s interactions and performance in various academic settings and during daily individual instruction. Observation takes place consistently and over time which makes it possible to “test biases and perceptions” thus establishing credibility (Mills, p. 115). I collected a great deal of data related to teacher pedagogy, student behavior, and complexity of class content and assignments. This combined information enabled me to develop a more complete understanding of Nicole’s skills relative to expectations for grade-level performance in order to identify strategic interventions. Data results are triangulated through data gathered by passive classroom observation and field note
documentation, insight gained through informal interviews, anecdotal notes of direct intervention and student work samples.

Criteria for transferability is met when descriptive data is gathered that is not relevant only to the current context but may be appropriate for application in other contexts (Mills, 2011). The information sought in this case study is applicable to all teachers of struggling adolescent writers that, sadly, is a larger audience than one would hope for. The descriptive nature of qualitative data allows the reader of the research study to visualize the context relative to their own teaching situation in order to apply findings appropriately.

As stated previously, data collection was triangulated which meets the criteria of dependability. Study methods generated a number of artifacts for review during the data collection process including reading and writing assignments, teacher interviews, student interviews, anecdotal notes of direct instruction sessions, field notes of classroom observations and student work samples. Regular review of these artifacts will allow for adjustments to be made to the research question or methods of data collection as directed by ongoing results.

The final characteristic of trustworthiness addressed by Guba (1981) is confirmability that is established through triangulation methods and careful maintenance of field notes and anecdotal notes. The keeping of detailed notes allowed me to regularly review my interactions with the student and my opinions regarding her classroom experiences in order to maintain objectivity to the best of my ability.
Informed Consent and Protecting the Rights of the Participants

Numerous conversations occurred between the student and me regarding the focus of this study and her role in the project. The student is 15 and able to sign her own student assent form. The parent was informed of the nature of the capstone project via hand-delivered letter that invited her to contact me to discuss the project in more detail. The letter delivered to the parent included a description of the context of the study, the research question that is the focus of the study, the student’s role in the project, an assurance that the student has no obligation to participate in the study, and that the school location and student name will be reported anonymously in the final paper. The parent returned the signed parental permission form without contacting me for further clarification aside from the information contained in the letter. Both regular classroom teachers signed an informed consent advising them of the purpose of the study, their right to withdraw or refuse to participate, and their right to be informed of the results of the study.

Data Collection

Nicole’s reading level was measured using the Qualitative Reading Inventory-5 (QRI-5). The QRI-5 is an informal reading inventory that measures student skill in the areas of word identification and comprehension. Scores reflect an estimate of a student’s independent, instructional, and frustration levels when reading narrative and/or expository text. The inventory measures a student’s reading fluency, prior knowledge of a topic, ability to recall detail and comprehension of both explicit and implicit textual information. Nicole’s independent, instructional, and frustration reading levels were approximated using expository text. Expository text was chosen because Nicole
consistently demonstrates (outside the parameters of this project) greater difficulty comprehending expository text and is currently experiencing a great deal of difficulty with expository texts across content areas.

Due to the project’s focus on cognitive ability and the hierarchy of critical thinking skills, the Cornell Critical Thinking Test, Level X was administered. Level X has norm comparisons for students in grades 4-14. Level Z is intended for use with gifted high school students, undergraduate and graduate college students and adults. Level X was administered with modifications; the test was presented in auditory format rather than Braille and test items were repeated upon request. Two factors guided my decision to administer the test in auditory format. First, I felt I would receive a more accurate result if Nicole were not required to decode voluminous amounts of Braille. Secondly, the accuracy of Nicole’s answers depended on her understanding of the questions. Comprehension of the text was dramatically improved by listening to the passages, questions, and answer choices as they were read with fluency and proper pacing to allow Nicole to process information. Additional modifications were made to extend the time required for Nicole to complete the test. Typical administration is 50 minutes but “may be extended if norm comparisons are not necessary” (Ennis, Millman & Tomko, 2005; p. 4). The test contains four sections and was administered over four sessions of 40 minutes each. The test measured Nicole’s skill in the areas of inductive reasoning, determining credibility, deductive reasoning and judging assumptions.

Student baseline writing samples were obtained from homework assignments in English and Global Studies. Both assignments were completed independently before beginning strategy instruction with Nicole. Nicole’s informal interviews were recorded
with her permission to ensure accurate recall of her statements. The same protocol was followed for informal interviews with both classroom teachers. Field notes and anecdotal notes were maintained to ensure accurate recall of data. As direct strategy instruction continued, a total of eight writing samples were collected (four in English and four in Global Studies) and scored according to the 3+3 writing rubric.

At the conclusion of this research project, Nicole is scheduled for diagnostic testing by district staff pursuant to the requirements for a triennial review. Updated measures of achievement, cognitive ability and expressive language processing are pending. Past reports of achievement and cognitive ability indicate average abilities.

**Data Analysis**

A variety of qualitative data was collected and analyzed for this action research case study. Data includes a reading comprehension inventory, a measure of critical thinking skill, informal student interviews, informal teacher interviews, field notes of classroom observations, anecdotal notes of direct strategy instruction, estimates of grade level difficulty for reading passages, measures of cognitive complexity for writing assignments and student work samples. Reading inventories were scored to determine Nicole’s independent, instructional and frustration level for reading comprehension. An estimated measure of critical thinking skill was determined by comparing student responses to scores for a norm group most closely resembling Nicole’s demographic. Informal interviews were transcribed and coded. Field notes were organized to identify trends in classroom questioning and discussion methods. All reading and writing assignments were collected for a four week period in both English and Global Studies. Reading passages were coded according to the Flesch-Kincaid scale to determine overall
readability and grade level of the text. Writing assignments were coded as to the complexity level of the assignment according to Bloom’s hierarchy of critical thinking skills. Student writing samples were scored using the 3+3 writing rubric attached in the appendices.

Findings and Discussion

Compiled data was analyzed to identify recurring themes across multiple sources. The first theme relates to the achievement gap between student reading comprehension level and the grade/complexity level of reading and writing assignments. The second theme to emerge involves the benefits of direct strategy instruction to promote the development of critical thinking skills and improve student ability to create written text. The final theme relates to student motivation versus ability to complete an assigned task.

The Gap between Independent Comprehension Level and Text/Task Complexity

In October 2010, the New York State Department of Education published a guidance document outlining implementation requirements for schools to establish a Response to Intervention (RtI) framework for literacy instruction and intervention. The primary goal of RtI is to provide high-quality instruction to ALL students while also providing appropriate intervention to students performing below standard. According to the guidance document, “RtI represents an important educational strategy to close achievement gaps for all students …” ("Response to intervention," 2010, p.1). Literacy instruction and intervention utilizes evidence-based teaching methods and targets students in grades K-8. RtI measures were launched in Nicole’s middle school during her eighth grade year. At that time, Nicole’s independent comprehension level was measured
to be fifth grade level, three levels behind. This gap qualified Nicole for a foreign language waiver. The district allows this exemption because comprehension of a foreign language is expected to be difficult for students who have limited comprehension skills in their native language. Nicole was removed from Spanish class and instead received daily reading and writing intervention. Nicole’s Braille reading fluency improved significantly however, her reading comprehension and writing abilities failed to improve that year and have remained at the same level to the present.

Nicole’s reading comprehension scores are displayed in Table 1. Because expository texts are more difficult for Nicole to comprehend than narrative texts, she read expository passages based on science and social studies content from grade five through upper middle school level. Nicole was permitted to read texts twice: once for decoding purposes and a second time to focus on comprehension. Schema (prior knowledge) scores are based on the quality of responses to four questions rated from 0-3. Accuracy scores indicate the number of miscues during oral reading. Recall measures student ability to retell the main ideas and supporting details of a passage. Comprehension of both explicit and implicit information is measured for each passage. Interesting and informative inconsistencies exist between scores.
Table 1

Percentage Correct Scores for Comprehension of Expository Texts

<table>
<thead>
<tr>
<th></th>
<th>Grade 5</th>
<th></th>
<th>Grade 6</th>
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<tr>
<td></td>
<td>Social</td>
<td>Science</td>
<td>Social</td>
<td>Science</td>
<td>Social</td>
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<tr>
<td>Social Studies</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schema</td>
<td>33%</td>
<td>46%</td>
<td>92%</td>
<td>42%</td>
<td>50%</td>
</tr>
<tr>
<td>Accuracy</td>
<td>99%</td>
<td>100%</td>
<td>99%</td>
<td>100%</td>
<td>99%</td>
</tr>
<tr>
<td>Recall</td>
<td>49%</td>
<td>52%</td>
<td>47%</td>
<td>45%</td>
<td>21%</td>
</tr>
<tr>
<td>Explicit questions</td>
<td>100%</td>
<td>100%</td>
<td>75%</td>
<td>25%</td>
<td>60%</td>
</tr>
<tr>
<td>Implicit questions</td>
<td>100%</td>
<td>100%</td>
<td>75%</td>
<td>25%</td>
<td>100%</td>
</tr>
<tr>
<td>Reading level</td>
<td>Independent</td>
<td>Instructional</td>
<td>Frustration</td>
<td>Instructional</td>
<td>Frustration</td>
</tr>
</tbody>
</table>

As the data indicates, Nicole is able to decode words at eighth grade level with nearly perfect accuracy. As her TVI, I know that she is also able to accurately decode even tenth grade vocabulary with the exception of foreign names and places in the Global Studies text. On average, Nicole reads at a rate of 69 words per minute when reading narrative and expositive texts. I expected her reading rate for expository texts to be slower, however the rate remained the same because Nicole does not slow down to process and comprehend the meaning of the passage. Schema (prior knowledge) scores were 50% or below for all topics except the Egyptian pyramids (92%), a topic that was of interest to Nicole in middle school. Despite taking US History and Government twice,
Nicole demonstrated poor retention of information related to the Great Plains (33%) and US immigration (50%). Nicole’s consistent inability to recall details of a reading passage (including familiar topics) is interesting given that she is an auditory learner who is able to recall impressive amounts of information that is meaningful to her. It is interesting to note that there is no great disparity between Nicole’s ability to answer questions requiring implicit versus explicit knowledge given that her written responses to assignments in content classes almost exclusively includes only explicit recall of factual information. It is noteworthy that Nicole demonstrated a greater understanding of social studies texts over science texts at both grade six and upper middle school levels. She has taken US History twice and is more familiar with vocabulary and terms from the history curriculum. Conversely, Nicole is not as familiar with content-related science vocabulary that had a negative impact on her comprehension of those passages. Though Nicole is able to independently comprehend texts at a fifth grade level, daily she engages with English and Global Studies texts at her instructional and frustration levels.

Given the focus of the research question in this study, it was important to gain insight into Nicole’s cognitive ability to think critically. Her abilities were measured by administering the Cornell Test of Critical Thinking Skill as described in the Data Collection section of this paper. Nicole’s responses were scored according to the test manual protocol: number of incorrect responses divided by two and then subtracted from the number of correct responses. The test manual contains normative data for a number of different comparison groups. Nicole’s score was compared to the group with the most comparable demographic: students in grades seven through nine in a large urban district. Compared to this group, Nicole scored in the 94th percentile meaning her score was
higher than 93% of students in that group. When compared to tenth grade college-bound students, Nicole scored in the 75th percentile meaning her score was higher than 74% of the students in that group. There was no comparative data for non-achieving high school students or students with disabilities. These findings seem to indicate that Nicole possesses average cognitive ability to think at higher levels even when compared to college-bound students functioning at grade level. This finding further suggests that Nicole has the potential to develop skills that will enable her to be a more successful writer if she applies herself and commits to the effort required to write effectively.

Reading and writing assignments were collected over a four-week period in English and Global Studies classes. Readability statistics were calculated for each reading passage using the Flesch-Kincaid option of the Spelling and Grammar tool in Microsoft Word. The Flesch-Kincaid readability score provides a measure of Reading Ease and an approximate Grade Level equivalent. Both readability scores are calculated using formulas that include the average number of syllables per word and the average number of words per sentence. The Reading Ease score is based on a 100-point scale with higher scores indicating text that is easier to understand and lower scores indicating more difficult passages. Microsoft recommends scores between 60 and 70 for most standard files (Test your document, 2013). Grade Level measures are based on U.S. school grade levels and Microsoft recommends that most standard documents have a score of 7.0 to 8.0. As shown in Table 2, all readings assigned in English class had a high Reading Ease score and a low Grade Level score indicating lower-level texts that were easier for Nicole to comprehend independently.
Table 2

**Complexity Level of Reading Passages Assigned in English Class**

<table>
<thead>
<tr>
<th>Assigned Texts</th>
<th>Reading Ease</th>
<th>Grade Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. “Peace Without Victory” speech by Woodrow Wilson</td>
<td>68.0</td>
<td>8.7</td>
</tr>
<tr>
<td>2. “What Happened During the Ice Storm” short story by Jim Heynen</td>
<td>93.1</td>
<td>1.8</td>
</tr>
<tr>
<td>3. “The Sniper” short story by Liam O’Flaherty</td>
<td>81.8</td>
<td>4.6</td>
</tr>
<tr>
<td>4. “Dreams” poem by Langston Hughes</td>
<td>92.7</td>
<td>4.2</td>
</tr>
<tr>
<td>5. “Harlem” poem by Langston Hughes</td>
<td>96.9</td>
<td>1.0</td>
</tr>
<tr>
<td>6. “Abandoned Farmhouse” poem by Ted Kooser</td>
<td>91.7</td>
<td>2.1</td>
</tr>
<tr>
<td>7. “The Color of Water” memoir by James McBride</td>
<td>82.1</td>
<td>5.1</td>
</tr>
</tbody>
</table>

As Table 2 indicates, the majority of reading assignments in English class were well within Nicole’s independent comprehension range with the exception of the Woodrow Wilson speech. This particular assignment from the Odell Education online Literacy Curriculum for grades nine and ten was part of a required unit utilizing texts from this source to address the skill of reading closely for textual detail. The classroom teacher estimates that approximately 40% of students in Nicole’s integrated class read and write at grade level (Informal Interview, 2013). With the exception of the novel, all other texts were read in class with guided instruction to annotate text line by line. Of the 60% of students functioning below grade level, half are one or two grade levels behind while half function at elementary levels (Informal Interview, 2013). Nicole willingly
reads most of the chapters assigned for homework but only comprehends the ‘story’ on a surface level as she does not engage with the text using higher-level critical thinking skills. All graphic organizers addressed skills needed to approach or question texts at higher levels during reading and also assisted students in gathering a selection of textual quotes to utilize for future writing assignments.

Nicole always dreads English class due to the frequency of assigned writing tasks. The focus for most written assignments was to practice constructing well-developed paragraphs that include a topic sentence, supporting textual evidence, transition sentences and a conclusion. Nicole does not demonstrate the ability to construct a complete paragraph containing all required elements. The classroom teacher noted that Nicole does not have the “writing stamina or critical thinking skills needed to develop elaborate, substantial thoughts” (Informal Interview, 2013; p. 2). Table 3 shows that most writing assignments required critical thinking skills at Nicole’s instructional level while a few were within her frustration level.

Table 3

*Complexity Level of Writing Assignments in English Class*

<table>
<thead>
<tr>
<th>Assigned task</th>
<th>Bloom’s critical thinking skills</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Level</td>
</tr>
<tr>
<td>1. Complete graphic organizer</td>
<td>2</td>
</tr>
<tr>
<td>2. Construct proper paragraph</td>
<td>2</td>
</tr>
<tr>
<td>3. Construct well-developed essay</td>
<td>2</td>
</tr>
<tr>
<td>4. Respond to study questions</td>
<td>2</td>
</tr>
<tr>
<td>5. Construct two-paragraph essay</td>
<td>3</td>
</tr>
</tbody>
</table>
As illustrated in Table 3, the only task at Nicole’s independent level were the chapter quizzes that were given primarily to determine which students read the assigned homework text. All other tasks required critical thinking skill at Nicole’s instructional or frustration level. As previously noted, critical thinking skills were encouraged through completion of graphic organizers requiring students to draw inferences, analyze text and defend judgments. These graphic organizers were generally begun in class and then assigned as homework for independent completion. The classroom teacher reports that homework is her “biggest and most frustrating concern” (Informal Interview, 2013, p. 2) because there is no ‘homework culture’ in this urban district. In fact, the district has a 10% homework rule that stipulates homework grades are to represent no more than 10% of a student’s calculated grade each marking period. Nicole rarely even attempts to complete homework assignments that require skills above her independent level. A pre-service teacher taught most lessons this semester and methods consisted mainly of lecture that rarely encouraged higher-level thinking (Field Notes, 2013). Remaining class time was generally used for short comprehension quizzes, journaling, and guided completion of graphic organizers to identify textual quotes for later writing assignments.
As Table 4 indicates, the reading demands in Global Studies class are significantly greater in both quantity and complexity compared to the reading demands in English class.

Table 4

*Complexity Level of Reading Passages Assigned in Global Studies Class*

<table>
<thead>
<tr>
<th>Assigned texts</th>
<th>Reading ease</th>
<th>Grade level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. “The Indo-Europeans”</td>
<td>49.5</td>
<td>9.9</td>
</tr>
<tr>
<td>World history textbook</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. “The Indo-Europeans”</td>
<td>71.8</td>
<td>4.4</td>
</tr>
<tr>
<td>Companion text</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. “The Early Development of Greece”</td>
<td>50.6</td>
<td>9.8</td>
</tr>
<tr>
<td>World history textbook</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. “Cultures of the Mountains and Sea”</td>
<td>58.2</td>
<td>6.2</td>
</tr>
<tr>
<td>Companion text</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. “Sparta and Athens”</td>
<td>60.1</td>
<td>8.6</td>
</tr>
<tr>
<td>World history textbook</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. “Warring City States”</td>
<td>58.0</td>
<td>6.3</td>
</tr>
<tr>
<td>Companion text</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. “The Peloponnesian War”</td>
<td>33.4</td>
<td>9.6</td>
</tr>
<tr>
<td>World history textbook</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. “Democracy and Greece’s Golden Age”</td>
<td>67.3</td>
<td>5.2</td>
</tr>
<tr>
<td>World history textbook</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. “Alexander’s Empire”</td>
<td>46.6</td>
<td>9.8</td>
</tr>
<tr>
<td>World history textbook</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. “Alexander’s Empire”</td>
<td>69.3</td>
<td>4.6</td>
</tr>
<tr>
<td>Companion text</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. “Setting the Stage: Rome”</td>
<td>52.9</td>
<td>9.4</td>
</tr>
<tr>
<td>World history textbook</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
As explained previously, lower reading ease scores indicate higher-level texts. It is evident from Table 4 that assigned reading passages are intended to be accessible to students reading on grade level as well as students reading below grade level. The world history textbook is a ninth grade text. The companion text covers the same topics presented at an average fifth grade reading level, substantially lower than the grade level of the ninth and tenth grade students in the class. Because of the volume of content to be covered, the classroom teacher feels it is critical to provide less complex passages so that students are able to “get the gist” of the material but he encourages students to also practice reading the more challenging texts to improve their skills (Informal Interview, 2013, p. 1). Reading passages from the companion text were always assigned for homework and include comprehension questions following each section of the passage.
Nicole completed 100% of assigned homework and demonstrated great satisfaction in her ability to independently and successfully complete the assignment and comprehend the material. Nicole did not attempt to read the more complex passages and read only the four that were required for participation in this project.

Prior to the current academic year, Nicole’s struggle with writing has been consistent in English class but she has only faced periodic challenges with writing tasks in other content area classes. Large writing assignments in US History were infrequent and aimed at introducing students to the format and requirements of Thematic and DBQ essay prompts in preparation for the Regents examination. The current focus on writing in all content areas has created a great deal of frustration for Nicole, particularly in Global Studies class. Writing tasks assigned in Global Studies are listed in Table 5.

Table 5

**Complexity Level of Writing Assignments in Global Studies Class**

<table>
<thead>
<tr>
<th>Assigned task</th>
<th>Bloom’s critical thinking skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Respond to comprehension questions</td>
<td>1 Recall</td>
</tr>
<tr>
<td>2. Fill in the blank</td>
<td>1 Locate information</td>
</tr>
<tr>
<td>3. Complete graphic organizer</td>
<td>4 Interpret; analyze</td>
</tr>
<tr>
<td>4. Respond to comprehension questions</td>
<td>1 Recall</td>
</tr>
<tr>
<td>5. Complete graphic organizer</td>
<td>5 Synthesize</td>
</tr>
<tr>
<td>6. Construct three-paragraph essay</td>
<td>6 Support your opinion</td>
</tr>
<tr>
<td>7. Answer multiple-choice questions</td>
<td>4 Analyze</td>
</tr>
<tr>
<td>8. Complete graphic organizer</td>
<td>4 Analyze</td>
</tr>
</tbody>
</table>
As Table 5 indicates, virtually every night students are assigned homework requiring some level of written response. The sheer volume of reading and writing tasks assigned in Global Studies is overwhelming for Nicole. Compared to English, essay assignments in Global Studies are far lengthier and require mastery of more complex skills. Of the six essays assigned in Global Studies, two required students to construct three paragraphs and one required five paragraphs. Of the four written responses assigned in English, three required students to construct only one or two paragraphs. The majority of the writing prompts in English class required critical thinking skills at level two which supports a number of students in that integrated setting who need practice at their instructional level. By comparison, only one Global Studies prompt required skills at level two. The majority required higher order skills at the top three levels of Bloom’s
hierarchy of critical thinking skills. The planning of most writing assignments for English was done in class with guided instruction. In Global Studies, students were expected to plan and execute essay assignments independently. Nicole rarely produced more than two or three sentences in response to these writing prompts and hated attending class because of the certainty of homework requiring thinking and writing (Informal Interview, 2013). Conversely, Nicole felt more positive about English class stating, “I do alright in that class. I know what’s going on” (Anecdotal Notes, 2013). Her difference in attitude toward each class is directly related to the achievement gap that exists for each. Nicole, who has historically hated English class, is now more uncomfortable in Global Studies where the achievement gap is greater and the demands on critical thinking are higher.

**The Benefit of Strategy Instruction to Develop Critical Thinking Skills**

During this study Nicole received guided strategy instruction at her instructional level, Level 2 of Bloom’s hierarchy of cognitive skills. Instruction focused on the skills of summarizing material and identifying main idea and supporting detail. These skills are fundamental to many classroom assignments and are key components of the writing process when planning and constructing thematic and DBQ essays on Regents examinations. Due to the nature of reading and writing assignments in English and Global Studies classes, it was determined that instruction regarding main idea and supporting detail was more suited to English assignments and summarizing information was more suited to Global Studies assignments.

When composing text, Nicole typically reproduces the first three to five sentences or bullet points she lays her fingers on as she sifts through a stack of pertinent but
disorganized Braille passages. Her sentences may or may not be related to one another or to the assigned writing prompt. Nicole does not attempt to construct a topic sentence or concluding sentence and does not re-read and edit her writing before submitting it for a grade. These tendencies are evident in the baseline writing samples collected for English and Global Studies. Figure 1 includes Nicole’s baseline writing sample for English and Table 6 shows her rubric scores for quality and quantity of text produced.

**Figure 1 Baseline Writing Sample for English**

*Figure 1. Baseline writing sample for English. This figure shows Nicole’s response to a writing prompt taken from the August 2013 English Regents Examination.*

Table 6

**Rubric Scores for Baseline Writing Sample for English**

<table>
<thead>
<tr>
<th>Quantity of text produced</th>
<th>Quality of text produced</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Words/assignment</strong></td>
<td><strong>Clear ideas</strong></td>
</tr>
<tr>
<td><strong>Sentences/paragraph</strong></td>
<td><strong>1/3</strong></td>
</tr>
<tr>
<td><strong>Words/sentence</strong></td>
<td><strong>14</strong></td>
</tr>
<tr>
<td><strong>49</strong></td>
<td></td>
</tr>
</tbody>
</table>

The writing sample in Figure 1 is Nicole’s response to a question taken from a past Regents examination directing students to read two passages and (1) choose a literary element or technique used by one of the authors and (2) construct a well-developed paragraph using details from either passage to show how the author used that element or technique. Nicole did not respond to the prompt but rather reproduced explicit
facts from both passages with no attempt to connect ideas between the two. She did not attempt a topic or concluding sentence and produced only five sentences in total. Most sentences are short and choppy though one long sentence contributes to the moderately high average of words per sentence. Nicole scored only one point out of a possible three in each area indicating quality of writing. Nicole’s baseline writing sample for Global Studies is of equally poor quality. Figure 2 includes Nicole’s baseline writing sample for Global Studies and Table 7 shows her rubric scores for quality and quantity of text produced.

**Figure 2 Baseline Writing Sample for Global Studies**

![Writing Sample Image]

Figure 2. Baseline writing sample for Global Studies. This figure shows Nicole’s attempt to construct a summary essay.

Table 7

**Rubric Scores for Baseline Writing Sample for Global Studies**

<table>
<thead>
<tr>
<th>Quantity of text produced</th>
<th>Quality of text produced</th>
</tr>
</thead>
<tbody>
<tr>
<td>Words/assignment</td>
<td>Sentences/paragraph</td>
</tr>
<tr>
<td>42</td>
<td>3</td>
</tr>
</tbody>
</table>

The writing sample in Figure 2 is Nicole’s response to a Global Studies writing prompt directing students to construct a two or three-paragraph summary of their notes about Julius Caesar. Students were instructed to include information from all of their
sources that included two reading passages, a government comparison graphic organizer and notes from video clips (Field Notes, 2013). Clearly, the first source Nicole found was the graphic organizer comparing Rome’s republican government to the current system of democracy in the United States. Again, she made no attempt to respond to the writing prompt. The sentences she reproduced are of poor quality and reflect the frustration she felt at the time as she declared repeatedly that she did not care what kind of work she turned in to the teacher and that “he want too much” (Anecdotal Notes, 2013, pg. 1).

As previously stated, guided strategy instruction included identifying main ideas and supporting detail for English passages and summarizing information for grade-level reading passages in Global Studies. Each week one reading passage was chosen for guided strategy instruction in English and in Global Studies. Related writing assignments were collected and scored according to the rubric. Nicole was very compliant during the first week of instruction and demonstrated some improvement in quality and quantity of writing in English and Global Studies. Figure 3 includes a writing sample for English (week 1 of strategy instruction) and Table 8 shows Nicole’s rubric scores for quality and quantity of text produced.
Figure 3 English Writing Sample – Week 1

![English Writing Sample – Week 1](image-url)

*Figure 3. English writing sample - week 1. This figure shows Nicole’s response to a writing prompt following strategy instruction.*

<table>
<thead>
<tr>
<th>Quantity of text produced</th>
<th>Quality of text produced</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Words/assignment</strong></td>
<td><strong>Sentences/paragraph</strong></td>
</tr>
<tr>
<td>58</td>
<td>3</td>
</tr>
</tbody>
</table>

The writing sample in Figure 3 is Nicole’s response to a writing prompt instructing students to construct at least two paragraphs discussing how the structure of a poem and the word choice impact the tone and meaning of the poem. Students were explicitly told to write a good topic sentence and use textual quotes and detail to support the topic (Field Notes, 2013). Improvement in the quantity of writing is inconsistent due to Nicole’s incorrect use of punctuation. She produced a few more words but the sentences produced (as punctuated) were fewer due to the length of the first sentence. The first sentence is a solid effort to construct a topic sentence. The most striking change
is Nicole’s attempt to address the requirements of the writing prompt by making reference to structure, word choice and tone. She scored two of a possible three for clarity because her ideas are related to each other and the writing prompt though she fails to support her ideas with detail. Nicole received the lowest score for word usage and flow because she uses no vocabulary aside from the words contained in the assignment and her sentences sound awkward due to mistakes in conventions and grammar. Nicole demonstrated some improvement in Global Studies writing as well. Figure 4 includes a writing sample for Global Studies (week 1 of strategy instruction) and Nicole’s rubric scores for quality and quantity of text produced.

**Figure 4 Global Studies Writing Sample – Week 1**

![Global Studies Writing Sample](image)

*Figure 4. Global Studies writing sample – week 1. This figure shows Nicole’s response to a writing prompt following strategy instruction.*

**Table 9**

*Rubric Scores for Global Studies Writing Sample – Week 1*

<table>
<thead>
<tr>
<th>Quantity of text produced</th>
<th>Quality of text produced</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Words/essay</td>
<td>Clear ideas</td>
</tr>
<tr>
<td>Sentences/paragraph</td>
<td>Word usage</td>
</tr>
<tr>
<td>Words/sentence</td>
<td>Flow/rhythm</td>
</tr>
<tr>
<td>57</td>
<td>2/3</td>
</tr>
<tr>
<td>8</td>
<td>1/3</td>
</tr>
<tr>
<td>7</td>
<td>2/3</td>
</tr>
</tbody>
</table>
The writing sample in Figure 4 is Nicole’s response to a writing prompt instructing students to construct a three-paragraph essay comparing and contrasting Hinduism and Buddhism. Nicole produced a bare minimum of text though, due to her summarizations, she included several facts related to one topic. Facts are disjointed and are clearly reproductions of bulleted information contained in the summary. She made no attempt to construct a topic sentence or connect the facts she reproduced. Nicole scored two of three for clarity of ideas because she has many main ideas but no supporting details for any single idea. Word usage received the lowest score because Nicole made no attempt to reword entire phrases from the summary. Her sentences are of varying lengths though they still sound awkward because Nicole does not identify pronouns and does not transition from a main idea to a supporting detail. Instead, she provides a succession of short, choppy main ideas. The initial week of strategy instruction was positive and productive.

Nicole was noncompliant and angry during the second week of guided strategy instruction. She did not participate fully in strategy instruction for English or Global Studies. During a Global Studies session, she slammed her electronic Braillewriter closed and walked out of the room (Anecdotal Notes, 2013). Despite her noncompliance with strategy instruction, Nicole did complete both writing assignments that week. Figure 5 includes a writing sample for English and Table 10 shows Nicole’s rubric scores for quality and quantity of text produced.
Figure 5 English Writing Sample – Week 2

The writing sample in Figure 5 is Nicole’s response to a writing prompt instructing students to choose a ‘tone word’ and write a paragraph utilizing that tone. Though she was angry and not speaking with me at the time, Nicole clearly stated her position on writing and produced her largest quantity of text. Word usage and rhythm improved and Nicole included both a topic sentence and concluding sentence. The same week, Nicole was struggling to construct a five-paragraph essay for Global Studies.

Figure 6 includes a writing sample for Global Studies and Table 11 shows Nicole’s rubric scores for quality and quantity of text produced.
**Figure 6 Global Studies Writing Sample – Week 2**

One geographic feature about Greece is that Greece is a peninsula and it had 2,000 islands. One of Rome's biggest achievements was the law system.

civilization: a highly developed society some of the changes. Greeks didn't live on land they live around sea so they didn't have to travel alot. The weather was very important in ancient Greece. Rome had a network of hard surface roads. The land was separated into regions.

**Figure 6.** Global Studies writing sample – week 2. This figure shows Nicole’s response to a Thematic Essay prompt with minimal strategy instruction due to student refusal to participate.

**Table 11**

**Rubric Scores for Global Studies Writing Sample – Week 2**

<table>
<thead>
<tr>
<th>Quantity of text produced</th>
<th>Quality of text produced</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Words/assignment</td>
<td>Words/sentence</td>
</tr>
<tr>
<td>Sentences/paragraph</td>
<td>sentence</td>
</tr>
</tbody>
</table>

| 47 | 5   | 9   | 1/3 | 1/3 | 1/3 |

Figure 6 is Nicole’s response to a Thematic Essay prompt directing students to construct a five-paragraph essay requiring three tasks. Students were asked to (1) define the term civilization and describe three characteristics common to all civilizations (2) describe three similarities and three differences between Greek and Roman civilizations and (3) explain important influences of Greek and Roman civilization on the world today. Nicole did not complete her summary of the grade-level review packet and clearly did not know how to begin this complicated, multi-step task. Due to the complexity of the assignment, students were allowed four class periods to work on the essay. As a Braille
student, Nicole was allowed double time to complete the assignment. She spent a total of 336 minutes venting, shuffling papers and refusing to request or accept assistance. Though the writing prompt required multiple steps, the content was familiar to Nicole and she should have been able to, at minimum, list three similarities and three differences between the two civilizations. Yet faced with a week of class days committed to writing and thinking tasks, Nicole produced far more attitude than text. She began this project with a commitment to participate fully and expend the effort necessary to complete a minimum number of texts for analysis. Her lack of motivation and poor attitude impacted her writing ability as much, if not more, than her low-level skills.

Student Motivation vs. Student Ability to Produce Written Text

In the four years I have witnessed Nicole’s battle with writing, I have considered and explored a number of external enemies. Is she of average intelligence? Does she possess the ability to think critically? How does her limited vocabulary impact her writing? Is she cognitively intact? How does Braille impact her writing? How does lack of visual information impact her writing? Does she have a language processing disorder? Does she understand the writing process? Does she know what good writing looks like? I have also told her repeatedly that her biggest enemy is internal; she simply has to make the choice to put forth the effort required. At this point in the project, Nicole had refused to communicate with me for almost a week that prompted the conversation transcribed in Figure 7.
Figure 7 Transcript of Student and Teacher Conversation – end of Week 2

Teacher: Have you always hated writing, Nicole?

Nicole: Always, Miss. You know, when I was in 7th grade, I used to just throw some fragment on the page for you. In 8th grade, I give you a whole sentence. Last year...I don't know about last year. It just worse this year.

Teacher: I've been your TVI for four years. I know firsthand what strategies you've been taught and how many people have tried to help you. You have extensive support, you know.

Nicole: You can't help anybody if they ain't wanna be help. That's why Shay (a visually impaired friend who is a late-graduating senior at another school) having such a hard time. She just refusing to work or even move out the hall...she just frustrated is all.

Teacher: And you're frustrated now that you're in tenth grade. What will your school day be like when you're a 20-year-old senior that's still struggling to pass the Regents exams?"

Nicole (frustrated): I know, Miss. You ain't gotta tell me that.

Teacher: You have to decide to put in the time and energy required to practice until you can do it. I can't do it for you.

Figure 7. Transcript of student and teacher conversation – end of week 2. This figure is a transcript of a conversation occurring the week Nicole declined to participate in strategy instruction.
The conversation references another Braille student in the district who passed her courses but is not able to pass the minimum number of Regents exams required for graduation. This friend is exhibiting extreme behaviors in school and has shared her feelings of frustration with Nicole and another student. Nicole knows it is her responsibility to do the enormous amount of work required to think and write at a level that meets Regents requirements. She renewed her attitude and agreed to honor her commitment to participate fully for the remainder of the case study.

Figure 8 includes Nicole’s final writing sample for English and Table 12 shows her rubric scores for quality and quantity of text produced.

**Figure 8 English Final Writing Sample – Week 3**

*In the Color of Water the author uses similes when he describes how the house looked. The author describes the house "like a hurricane hit it." (72) He talks about how things are all over the place. He also says the house was like a combination of a "three ring circus and a zoo." There was alot of activity around the house. The author's use of similes makes the reader picture how messy the house was.*

*Figure 8. English final writing sample – week 3. This figure shows Nicole’s response to a writing prompt following strategy instruction.*

Table 12

**Rubric for English Final Writing Sample – Week 3**

<table>
<thead>
<tr>
<th>Quantity of text produced</th>
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<td><strong>Sentences/paragraph</strong></td>
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Figure 8 is Nicole’s response to a writing prompt directing students to (1) identify a literary device used in the chapter (2) write a well-constructed paragraph showing how the author uses this device and (3) support your ideas with textual quotes. Nicole constructed both a topic and concluding sentence and fully addressed the elements of the writing prompt. The quantity of text produced still does not reflect a significant increase nor does Nicole include sufficient supporting detail that would impact the quantity of text. However, her ideas are clear to the reader and she supports her ideas with textual evidence. Nicole produced similar results in her final Global Studies writing sample.

Figure 9 includes Nicole’s final writing sample for Global Studies and her rubric scores for quantity and quality of text produced.

**Figure 9 Global Studies Final Writing Sample – Week 3**

![Image of Global Studies final writing sample – week 3]

_The central Government was strong it allowed farming and trade to prosper and central government was efficient. Central government gave power to the local government and leaders were elected merchants and artisans. Also women were allowed to be on government councils during the earlier times. there were four basic caste that people were born into and you could not change them unless they were reincarnated. The village was the center of Indian life and it was governed by caste rules and traditions. In the household the father or the oldest male in the house was the leader. Mathematics created the zero concept of zero and also the decimal system. Fables and folk tales were collected and recorded and Kaliadas, wrote the play Shakuntala._

**Figure 9. Global Studies final writing sample – week 3. This figure shows Nicole’s response to a writing prompt following strategy instruction.**

Table 13

**Rubric for Global Studies Final Writing Sample – Week 3**

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Figure 9 is Nicole’s response to a writing prompt directing students to write a summary describing the relationship between karma, reincarnation and the caste system. Nicole produced the greatest amount of text in response to this prompt. Her sentences are of varied length and she used compound sentences rather than a series of short, choppy sentences. Nicole’s ideas are clear but they are not arranged to address the writing prompt and she made no attempt to construct a topic or concluding sentence. She reproduced many of the bullet points included in her summary therefore she created a series of main ideas and did not elaborate on the ideas specified in the writing prompt. Nicole was very proud of both her final English writing sample because of her success in constructing a topic and concluding sentence. She was equally proud of her final Global writing sample because she was able to produce almost double the amount of text than normal. The success she experienced may be a springboard to future success but only if Nicole continues to choose to devote time and effort to the entire process of the writing task.

**Conclusions and Implications**

My research question aimed to determine how the quality and quantity of student text composition is impacted by guided strategy instruction of critical thinking skills at the student’s instructional level. Research suggests that cognitive strategy instruction is an effective method to teach skills to students of all ages and abilities and with sufficient practice, students may achieve independent mastery of skills introduced through strategy instruction. Bloom’s hierarchy of critical thinking skills was used to identify the complexity level of writing assignments in two content area classes, English and Global Studies. Guided strategy instruction in English class included organizing reading passages according to main idea and supporting detail. Guided strategy
instruction in Global Studies class included organizing reading passages by summarizing the main ideas of each paragraph in bullet form and creating a summary paragraph of the entire reading passage. Writing assignments related to these reading passages were scored according to a rubric and compared to baseline writing samples. Additional data included informal interviews with classroom teachers and the student as well as field notes and anecdotal notes.

The data presented suggests a number of implications and conclusions relevant to struggling adolescent writers and their content area teachers. First, strategy instruction to promote higher order thinking should be provided at the student’s instructional level to reduce student stress and increase the likelihood that the student will achieve automaticity with the skill. This methodology is utilized in the balanced literacy approach in which reading and writing skills are taught through guided instruction at the next highest level of complexity in order for the student to master those skills for independent use. This approach is modeled on Vygotsky’s zone of proximal development in which an expert teaches a novice with the goal of achieving eventual independence. Nicole routinely refused to complete assignments requiring tasks at her frustration level, was often willing to attempt tasks at her instructional level (especially with guided assistance) and always completed tasks at her independent level.

Given the knowledge that we all approach every task with either an independent, instructional or frustration level of knowledge, differentiating classroom instruction should be the norm. The needs of all students are not met if classroom instruction, materials and assignments target one specific group of
learners. Nor are the needs of all students met if every student is required to complete multiple assignments at various levels that cover the same topic. Implicit in the differentiated instruction model is teacher willingness to re-conceptualize their entire classroom and curriculum. Implications may also be made about the extreme importance of fostering a classroom culture and atmosphere that supports and develops higher order critical thinking skills. Research supports classrooms that encourage interactive discussion and higher order questioning techniques rather than a lecture-based methodology.

It is safe to conclude that, without intervention, the achievement gap between independent skills and academic requirements will continue to widen implying the probability that these struggling students will become increasingly negative toward education and more likely to contribute to truancy and dropout statistics. These same students are most often responsible for disruptive behavior on and off campus. It is critical that all students experience success but also important that all students are challenged. This is a difficult balance to achieve in today’s diverse classroom but it is also the hallmark of an expert teacher. Student attitude (driven by student success) is probably more important than actual student ability. All of the old adages apply; you really cannot make anyone do anything.

Lastly, the study supports the conclusion that it is critically important to teach students how to think critically. Though Bloom’s Taxonomy originally sought to improve the complexity of thinking skills in education, it is incredibly important that students today develop critical thinking skills that have applications outside the classroom. It is crucial that students today develop the ability to approach all types
of media with a critical eye, making educated decisions based on informed
evaluation and judgment. It is imperative that students learn to view the world and
relationships with the ability to consider all viewpoints in an attitude of tolerance.
Potential employers value critical thinking abilities and seek to employ candidates
who demonstrate the ability to think quickly and creatively or to problem-solve and
find alternate solutions. Critical thinking is truly important in all aspects of life.

A limitation of this study is the breadth of the study. Strategy instruction in
critical thinking skills did impact the quality and quantity of the student’s written
text but only in the ways measured by the rubric. Quality did not consider
paragraph construction, grammar, inclusion of topic and concluding sentences,
addressing the writing prompt, etc. When completing writing assignments, the
student still demonstrated a tendency to reproduce the exact phrases written
during strategy instruction. The study is further limited by the motivation and
attitude of the student. It is questionable whether or not the student will continue to
invest the time and effort required to complete the additional work of summarizing
large volumes of material or condensing a reading passage to main ideas and
supporting details. The student has an exceptionally wide gap to close. She requires
numerous higher-level skills to complete current assignments including
constructing a well-developed essay at grade level. It will require a huge amount of
effort. She is capable of achieving independent mastery of these critical thinking
skills but her success now and in the future is predicated entirely on her motivation,
desire to succeed, and willingness to expend the effort to achieve success. There will
be many dedicated educators along the way to support her success if she so chooses.
References


Vandenberg, R., & Swanson, H. L. (2007). Which components of working memory are important in the writing process?. Reading and Writing, 20, 721-752.


## Critical Thinking Skills

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### Knowledge

- Define
- Fill in the blank
- List
- Identify
- Name
- Recall
- State
- Tell
- Underline

**Identification and recall of information**

- Who
- What
- Where
- When
- How
- Describe
- What is

### Comprehension

- Convert
- Interpret
- Explain
- Describe
- Paraphrase
- Put in order
- Restate
- Retell in your own words
- Summarize
- Trace
- Translate

**Organization and selection of facts and ideas**

- Re-tell _______ in your own words.
- What is the main idea of _________?
- What differences exist between _________?
- Can you write a brief outline?

### Application

- Apply
- Compute
- Conclude
- Construct
- Give an example
- Illustrate
- Make
- Operate
- Show
- Solve
- State a rule or principle
- Use

**Use of facts, rules, and principles**

- How is _____ an example of _____?
- How is _____ related to _____?
- Why is _____ significant?
- Do you know of another instance where _____?
- Could this have happened in _____?

### Analysis

- Analyze
- Categorize
- Classify
- Compare
- Determine the factors
- Diagram
- Differentiate
- Distinguish
- Examine
- Infer
- Specify

**Separating a whole into component parts**

- What are the parts or features of _________?
- Classify _________ according to _________:
- Outline/diagram/web/map _________:
- How does _____ compare/contrast with _____?
- What evidence can you present for _____?

### Synthesis

- Change
- Combine
- Compose
- Construct
- Create
- Design
- Find an unusual way
- Formulate
- Generate
- Invent
- Originate
- Plan
- Predict
- Pretend
- Produce
- Rearrange
- Reconstruct
- Reorganize
- Revise
- Suggest
- Support
- Visualize
- Write

**Combining ideas to form a new whole**

- What would you predict/infer from _________?
- What ideas can you add to _________?
- What might happen if you combined _________ with _________?
- How would you create/design a new _________?
- What solutions would you suggest for _________?

### Evaluation

- Appraise
- Choose
- Compare
- Conclude
- Decide
- Defend
- Evaluate
- Give your opinion
- Judge
- Justify
- Prioritize
- Rank
- Rate
- Select
- Support
- Value

**Developing opinions, judgments, or decisions**

- Do you agree that _________? Explain.
- What do you think about _________?
- What is most important?
- Prioritize _________ according to _________?
- How would you decide about _________?
- What criteria would you use to assess _________?
Appendix B

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Quality of text produced

Clear ideas
1. My ideas are not related to each other or the topic
2. I have lots of main ideas but no details
3. My message is clear and makes sense to the reader

Word usage
1. I used only the vocabulary used in the text
2. I used vocabulary from the text and added my own descriptive words
3. I rephrased the text to sound more like me

Flow and rhythm
1. My sentences are choppy and sound awkward
2. The length of my sentences varies but still sound awkward
3. My sentences sound natural and are easy to read aloud