Sketchnoting as a Reading Strategy:

Effects on Motivation, Self-Efficacy, and Comprehension in a High School English Class

by

Jennifer Marie Treptow

A Dissertation Presented in Partial Fulfillment
of the Requirements for the Degree
Doctor of Education

Approved April 2020 by the
Graduate Supervisory Committee:

Ruth Wylie, Chair
Josephine Peyton Marsh
Rebecca Droessler Mersch

ARIZONA STATE UNIVERSITY

May 2020

ABSTRACT

Students across the United States of America are struggling to achieve college and career readiness in reading before they graduate from high school. The phenomenon of reading comprehension in older adolescent students plagues teachers because of its complexity and the perceived need for multiple solutions. However, close inspection of the research reveals factors such as self-efficacy, motivation, and lack of skills with regards to using reading strategies all contribute to the problem. The purpose of this study was to explore the effect of sketchnoting as a reading strategy on student self-efficacy for reading, motivation for reading, and reading comprehension in a high school classroom setting. With words, symbols and pictures, sketchnoting as a reading strategy provides students with a platform to interact with their text while recording key ideas and details as well as connections they make to the text. While there are several theoretical frameworks that guide research on reading, this concurrent, mixed methods, action research study specifically focuses on Collaborative Learning Theory, Self-determination theory, and Schema Theory. These theoretical frameworks also establish a foundation for the study of methods to address the problem. This framework is rooted in the constructivist perspective in that each student brings to the learning environment their own levels of motivation and self-efficacy as well as their own perspectives on the truth to be learned. The participants of this study were juniors in a required English 11 class that I was teaching. There were six instruments used for this study: pre- and post-reading survey, Qualitative Reading Inventory (QRI), Reading Skills Assessment, general observations, sketchnote assessment, and interviews. Results of the semester-long study show that while there statistically was no evidence of a relationship between student use

of sketchnoting as a reading strategy and an increase in reading motivation or self-efficacy for reading, there was evidence to show that there is a relationship between student perception of sketchnoting being meaningful to their understanding of the text and their motivation and self-efficacy. Sketchnoting as a reading strategy did not have a statistical influence on student reading comprehension; however, the students reported that they remembered the details of the text they read better when using sketchnoting and that sketchnoting helped them make connections to the text they read. This research showed that sketchnoting as a reading strategy provided students with a tool to help them identify the key ideas and details of a text and it also provided them with a platform to take them beyond the key ideas and details through making connections.

DEDICATION

This dissertation is dedicated to my family and friends: to those whose love and sacrifices have allowed me to fulfill one of my dreams. It is especially dedicated, to my husband and children. I have been truly blessed.

ACKNOWLEDGMENTS

There have countless people who have guided and fostered the development of this research project. I am grateful for the participants of this study and the several cycles of research before this final dissertation. Through your willingness to participate we have learned more about reading and students in the high school classroom. We can take these findings and continue to make the classroom a better place to learn. I am also grateful for my Dissertation Committee. Your knowledge and expertise were invaluable to the completion of this project. Thank you to each of my teachers, instructors and professors not only at ASU, but throughout my personal educational journey. It has been a long one, but extremely satisfying. I am excited to see where tomorrow takes me. I have been blessed with the most amazing and self-less family and group of close friends anyone could ever ask for. My husband and children have supported me throughout this journey and are truly the great ones. My friends and fellow teachers, your input and guidance throughout this process has been invaluable. I will never ever be able to think of the word "schema" the same! Not one bit of this dissertation has been done alone, we have all authored a little bit of it through input, revisions, feedback, and suggestions. Thank you, again, I am truly blessed.

TABLE OF CONTENTS

APPENDIX Page

LIST OF TABLES

Table Page

LIST OF FIGURES

CHAPTER 1

INTRODUCTION AND PURPOSE OF THE STUDY

College and Career Ready (CCR) standards have been implemented to guide instruction in K-12 schools to ensure high school graduates are prepared to meet the requirements of the workplace or the demands of higher education (US Department of Education, 2018). Nevertheless, all too often, high school graduates are coming up short of attaining the standards (Biancarosa, G., & Snow, C. E., 2004). Results from several sources show American students are not CCR in English Language Arts (ELA) and Literacy. For example, in the 2018 graduating class, nation-wide, over 1.9 million students took the ACT; of those students, only 46% met the ACT College Readiness Benchmarks in Reading and 11% were within 2 points of the benchmark (ACT, 2018). Additionally, according to National Assessment of Educational Progress (NAEP) assessments, only 37% of American high school seniors scored proficient or above in reading (NAEP Report Cards, 2017). As its measure of CCR in ELA and Literacy, the state of Wisconsin uses results from the state required standardized assessment WI-ACT to determine whether students meet the CCR benchmarks in this domain. In the state of Wisconsin, within the graduating class of 2018, 42% met the proficiency reading benchmark on the ACT. At Beaver Dam High School, which is the setting for this study, 31.7% of the class of 2018 met the proficiency reading benchmark on the ACT. Student performance on these standardized assessments demonstrates a need to address the problem of reading comprehension for adolescent students.

Local and Larger Context

Despite the shortcomings exhibited by students on the CCR ELA and Literacy measures noted above, BDHS was identified as a top-rated high school by *US News and World Report* which recognizes schools, based on six factors that affect student performance including standardized test scores on reading and math, underserved student performance, attendance and graduation rates, as well as college preparedness. BDHS has also been designated as an Advanced Placement Pacesetter school based upon student performance on Advanced Placement assessments. During the 2015-2016 school year, BDHS was recognized by the State of Wisconsin as "Exceeding Expectations" on the state's report card. While on the State of Wisconsin Report Card that indicated some success for students at BDHS overall, specifically for ELA, only 30.6% of the student demonstrate that they meet the proficiency benchmark for achievement. By the 2017-2018 school year, the State of Wisconsin recognition ranking had dropped to "Meeting Expectations," and on the 2018 state–mandated ACT, only 31.7% of the high school juniors at BDHS were identified as being CCR in reading. As noted in Table 1, the reading proficiencies at the high school are on the decline.

During the 2014-2015 school year, the Beaver Dam Unified School District implemented a standard English curriculum for all the students in grades 6-11. It is structured around the Common Core Standards and creates focus for instruction and assessment within English classes. Prior to the implementation of the new curriculum, each of the nine English teachers at the high school taught their section of English without shared common assessments.

Table 1

Beaver Dam High School Student ACT Reading Proficiency Rates

% Proficient	9th Aspire	10th Aspire	11th ACT
Class 2018	48.5	44.3	37.6
Class 2019	50.8	40.5	31.7
Class 2020	46.2	33.1	
Class 2021	43		

The new curriculum was implemented to ensure that all students were receiving a similar curriculum for the same class; moreover, this curriculum was geared to prepare students for the ACT. While the curriculum provided teachers with common texts and a common plan for the class, the curriculum as implemented did not allow for differentiation, as the teachers were instructed that they were not allowed to adapt the curriculum to align to individual student or class needs. Tomlinson & Strickland (2005) define differentiation as a "systematic approach to planning curriculum and instruction for academically diverse learners. It is a way of thinking about the classroom with the dual goals of honoring each student's learning needs and maximizing each student's learning capacity" (p. 6). Within my sixteen years of education, I have found differentiation to be a key component to a successful classroom. Throughout the last two years, the failure rate of students in English 11 has risen and student ACT scores in ELA have dropped. During the 2016-2017 school year only 60% of the students in English 11 class passed the class. Since this is a mandated class, they were forced to retake the class

using a credit recovery program or in summer school. As a result, the English 11 team worked with the principal and the curriculum director to adapt the texts to differentiated reading levels, create theme-based units within the curriculum, and scaffold activities as necessary for student success. With these changes, there has been a drastic drop in the failure rates (down to 24%) of English 11, but as noted in Table 1, the student proficiency rates are still on the decline.

I was hired as an English teacher during the 2015-2016 school year. As I implemented the curriculum over the first two years, I observed that many of the passages of the standard resource for English 11 were beyond students' current reading levels based upon their ability to read and comprehend the text. The students did not have grade-level reading readiness and did not possess the skills to be successful in the class. Both high achieving students (i.e., those who academically make honors) and lower achieving students (i.e., those who do not make honors) were failing the class. As students continued to score extremely low on their end of unit assessments, the three English 11 teachers found themselves curving grades to allow for students to pass on the assessment and in the course. They also pushed the administrative team to allow for curricular adaptions to better fit student academic needs.

During the 2015-2016 and 2016-2017 school years, I developed a professional goal to work toward increasing the reading comprehension levels of students in English 11, specifically with key ideas and details. Using the Common Core Standards, the State of Wisconsin identifies specific components of reading that are standardized for student achievement. Identifying key ideas and details is one of the four categories that the ten

anchor reading standards falls into. See Appendix A for the Common Core Anchor Standards. Table 2 illustrates the College and Career Reading Standards for Key Ideas and Details. To achieve proficiency within the standards it is expected that students can identify what the text says, draw inferences from the text, determine themes of the text, and analyze the text.

Table 2

College and Career Reading Standards for Key Ideas and Details Grades 11-12

Reading Literature Standards	Reading Informational Text Standards
Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.	Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.
Determine two or more themes or central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to produce a complex account; provide an objective summary of the text.	Determine two or more central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to provide a complex analysis; provide an objective summary of the text.
Analyze the impact of the author's choices regarding how to develop and relate elements of a story or drama (e.g., where a story is set, how the action is ordered, how the characters are introduced and developed).	Analyze a complex set of ideas or sequence of events and explain how specific individuals, ideas, or events interact and develop over the course of the text

The focus increasing student reading comprehension was on the standards for key ideas and details because they are pivotal for students to understand the text being read and to make connections to the text for reading comprehension to occur. I wanted my students

to increase their reading comprehension, and I was aware of the discrepancy between students' current reading abilities and the reading abilities expected of them. The students in my target group attained reading scores close to the appropriate college and career readiness benchmarks as shown in the ACT Aspire Teacher Report. Students also scored low on their English 11A (first semester of the required junior year English class) reading pre-assessments. During both years, my students failed to reach their growth target that I set for them, even with the interventions such as reading strategy usage I implemented during the 18-week class. I had a strong desire to provide my students with the tools necessary to be effective readers when they leave my classroom and yet I could not figure out what piece of the reading comprehension puzzle I was missing.

Although there are many programs in place in early elementary school for students who struggle with reading, there are few interventions in place for adolescents, even though we know that many adolescent students continue to struggle with reading comprehension (Cantrell, et al, 2010). Several programs are available for students who fall far below the grade expectations levels, but in my initial search there were few specific, research-based strategies for the gray area: students who are close to meeting reading level expectations. Given this outcome, it is not surprising that growth in reading comprehension scores has remained relatively flat over the last 30 years with U.S. eleventh graders placing close to last when compared to international students (Kamil, 2003). Thus, teachers need more options to aid struggling readers who have fallen short of CCR in reading.

We know that we need to do something to enable adolescent students to increase their reading skills; however, the literature on adolescent struggling readers does not provide a consensus about the best course of action to take at the high school level. There is some literature suggesting concepts that, when implemented, have a positive impact on reading comprehension in older adolescents; for example, providing students with more explicit vocabulary instruction, providing instruction on various reading strategies focused on comprehension, providing opportunities to discuss text, increasing their content knowledge and finding ways to increase motivation (Guthrie, Wigfield, VonSecker (2000); Kamil et al, 2008; Edmonds, et al, 2009; Schiller et al, 2012). Biancarosa & Snow (2006) take the idea of increasing reading comprehension a step further by also recommending infrastructure improvements such as an increase in the amount of time spent on teaching literacy and an increase in professional development for school personnel regarding literacy instruction. There are some strategies that have been shown to work with struggling adolescent readers, but the key is to implement strategies that fit with each individual learner's needs. This takes extended time and effort for all the parties involved but would be well worth the effort if we could see growth and success in reading with our struggling students.

Using this research as a guide, I began my first cycle of action research to work to increase the reading comprehension of my 11th grade students. Action research is research completed by educators in which a problem is critically identified and examined by the educator with the goal of improving professional practice and student outcomes (Mertler, 2017). Often, action research is completed in a pattern of cycles to allow for

repeated stages that include the identification of a problem, analysis and interpretation of the facts surrounding the problem, planning for action, taking action, and evaluation and reflection of the results that could lead to future analysis and action. I began my first cycle of action research when I conducted a pilot study to improve the deficit of reading comprehension in English11 students in a directed study hall. The study hall was in addition to the English 11 class in which each of the students was enrolled and was where specific reading strategies were taught. The English 11 Intervention Study Hall was implemented during the 2017-2018 school year. Specific criteria were followed for students to be admitted into the study hall, including: (1) having failed either semester of English 10 or currently failing English 11, (2) being identified as "Close" or "Needs Support" on the ACT Aspire Reading, English, or Writing assessment, or (3) being recommended for the Study Hall by a previous English teacher. Once admitted into the study hall, students first completed a survey designed to gather data regarding student perceived ELA abilities and motivation for reading. After the survey was administered and analyzed, I determined which strategies and interventions would benefit the student the most and met with the student to discuss. In an effort to establish appropriate reading strategies, I worked with the special education department chair and developed leveled texts for my students based upon the curriculum offered in the English 11 class to provide students with passages that were at their reading level. Moreover, I researched which reading comprehension strategies would be best for each student based upon the student's perceived needs and the perceived needs of the student as expressed by their previous and current English teachers. In conducting this initial action research, I planned to answer

the research questions of how and to what extent did tailored reading strategy instruction affect reading comprehension and student self-efficacy for reading.

The data indicated that the students in the English 11 support study hall believed that students struggle with English 11 because they either don't understand the text, are lacking the tools to read the material, choose not to read the assigned material, or lack interest in the assigned reading material. When asked specifically about why students struggle in English 11, 71% of the students reported that students struggle because they don't understand the text. They reported that they valued the reading strategies that were taught as tools to aid in reading comprehension. When interviewed about the value of the reading strategies one student stated, "I guess just having more tools in your pockets so you're not down to just one strategy, but you can learn all of them so you can fully comprehend what's in the text and what's being said" was a good reason to learn the strategies. The students identified varying strategies as being useful for them as individuals. Five of the seven students mentioned a specific strategy as being better for them or that they preferred it. One student stated, "I liked the one where we draw the picture. Because when I draw a picture it helps me better understand the reading. Read and paraphrase works, I just like the pictures better." However, students specifically mentioned that they didn't appreciate having to practice strategies that they felt they had already mastered. One student stated, "I like the Reading and Paraphrasing 9RAP) the best I guess. The visualization one was ok. I guess I'm good at picturing things in my head already. I feel like some kids can already do that so I feel like it's not really necessary to draw it out...I can already see what's going on and thinking about it." All of

the students who were asked responded that the reading strategies they were taught through the intervention helped them to become a better reader. Through the completion of my Cycle 1 research, I concluded that the reading strategy instruction was effective for increasing student motivation and self-efficacy for reading. In the second cycle of action research, I expanded on the pilot study to see if these results could be scaled to impact all of the students in my English 11 class.

Introduction to Sketchnoting

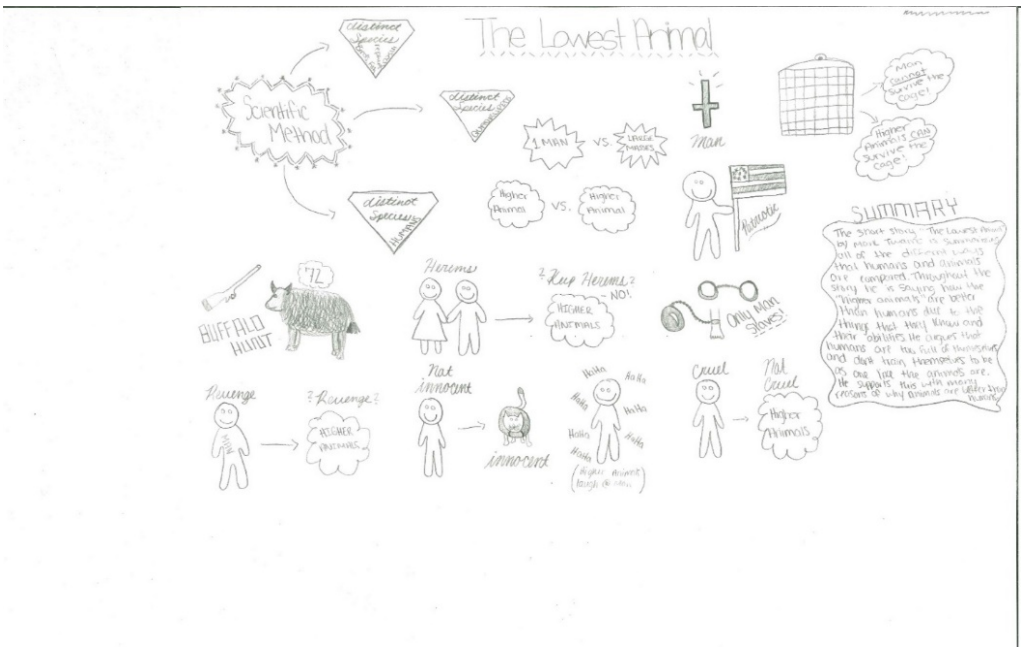
Throughout the last five years, I have been working specifically via professional development opportunities and the Mary Lou Fulton EdD program to research and pilot strategies to increase the reading comprehension of my students. I've learned that single strategies are rarely enough to encompass the needs of all learners; however, the concept of sketchnoting encompasses organization and planning skills, visual skills, and writing skills as students work to identify the meaning of the texts they encounter. Sketchnotes are created through the process of hearing or reading information and visually putting it down on paper in the manner the sketchnoter deems fit. While the use of sketchnoting is a recent phenomenon as a reading strategy, the concept of it has been around for centuries as people such as Leonardo de Vinci, Thomas Edison, and Albert Einstein have all been said to have used it (McGregor, 2019). Mike Rohde (2013), author of two books on sketchnoting, describes the innovation as "rich visual notes created from a mix of handwriting, drawings, and hand-drawn typography, shapes, and visual elements like arrows, boxes, and lines" (p. 2). There are many ways to create a useful sketchnote and being a creative artist is not a requirement. The goal of sketchnoting is to actively engage

students in listening or reading by visually compiling thoughts or ideas, new learning, and connections. It can be done individually or collaboratively. In addition to being fun, there are many other benefits to utilizing sketchnoting. Sketchnoting makes thinking visible, includes linguistic and nonlinguistic representation of information, allows for student choice, strengthens memory, makes annotation thinking intensive, enhances focus and reduces stress, and embraces design (McGregor, 2019). As an innovation in the classroom, sketchnoting provided students with an engaging visual learning activity that helped them effectively interact with text. See Figure 1.

As a viable reading strategy within the high school classroom, sketchnoting could potentially enable students to build their reading comprehension toolbox.

Figure 1

Student Sample of Sketchnoting Mark Twain's "The Lowest Animal," with Specific Examples From his Satire About Human Nature



Research Questions

Schools across the country are looking for a way to engage student readers with text through effective reading strategies. Even with the hordes of reading strategies available, there is still little growth in student reading proficiency. The innovation of sketchnoting while reading is a reading strategy that is designed to be engaging for students and shows great promise for improving the way students engage with text.

RQ 1: How and to what extent does implementing sketchnoting in an English 11 classroom affect students' motivation and self-efficacy for reading course material?

RQ 2: How and to what extent does implementing sketchnoting affect students' reading comprehension in English 11?

RQ 3: What are the impacts of adding sketchnoting to the English 11 classroom?

CHAPTER 2

THEORETICAL PERSPECTIVES AND RESEARCH GUIDING THE PROJECT

Many adolescent students struggle with reading comprehension. The phenomenon plagues teachers because of its complexity and the need for multiple solutions. Students' struggle with reading comprehension is typically attributed to ability level. Nevertheless, closer inspection of the research reveals other factors such as student motivation, self-efficacy, and lack of skills with regards to using reading strategies all contribute to the problem. While there are several theoretical frameworks that guide research on reading, this study focuses on schema theory. In addition, this innovation draws on self-determination theory and collaborative learning theory in developing the methods to address the research questions. These theoretical frameworks also establish a foundation for the study of methods to address the problem. This study is rooted in the constructivist perspective in that students bring to the learning environment their own levels of motivation and self-efficacy as well as their own perspectives on the truth to be learned (Crotty, 2015; Koro-Ljungberg, Yendol-Hoppey, Jude Smith & Hayes, 2009)

Why Adolescent Students Struggle with Reading

Many studies have been conducted regarding the reasons students struggle with reading comprehension. The results of these studies identify cultural, social, educational system, and individual influences on reading comprehension as barriers to effective reading (Kamil, M. L., Borman, G.D., Dole, J., Kral, C. C., Salinger, T., & Torgesen, J. (2008). Furthermore, three factors appear often in the literature as affecting student success with reading: student self-efficacy, student motivation, and student skill with

using specific reading strategies (Ivey, 1999; Kamil, 2003; Kennedy, 2009/2010, Salem, 2017). For example, Kennedy (2009/2010) claimed, "Children's levels of motivation, engagement, and sense of self-efficacy are instrumental in determining the extent to which they will engage in literacy activities both inside and outside of school" (p. 1). Moreover, Kamil (2003) suggested that strategy instruction was critical to increasing students' motivation. Combining strategy instruction with an increase in student motivation and self-efficacy for reading could aid in increasing student college and career readiness in reading.

Self-Efficacy

Self-efficacy is viewed as individuals' perceptions of their ability to be successful with a task and it affects individuals' activity. Bandura (1986) defined self-efficacy as "people's judgements of their capabilities to organize and execute courses of action required to attain designated types of performances" (p. 391). Self-efficacy has been shown to be affected by several factors including students' successes or failures in accomplishing a task in the past or even the successes and failures of others whom they have observed trying to accomplish a task. Self-efficacy has also been shown to be affected by social and psychological factors. Bandura recognizes four major sources of information that affect self-efficacy including performance accomplishments, vicarious experience, verbal persuasion, and physiological states (Bandura, 1971). Each source together and individually affects self-efficacy. Mastery of information builds confidence in ability, which leads people to be more apt to continue learning. Not all learning, however, takes place individually. Through vicarious experiences people watch and

learn from the experiences of others. While verbal persuasion provides less motivation to work than performance accomplishment it can be effective because it provides a learner with easy positive reinforcement. Similarly, self-doubts can be eradicated by providing positive physiological reinforcements to lessen fears associated with learning. Thus, students make and will make decisions about their possible successes based on previous endeavors. Although there are many possible factors affecting students' self-efficacy, those who believe they can complete a task successfully, are more apt to actually achieve the goal and those who have struggled to complete a task successfully are more apt to shy away from attempting it again.

Individuals read more when they feel confident in their ability to read (Ivey, 1999). This performance accomplishment helps to build confidence. Students who view ability as something that can be increased through knowledge and experience challenge themselves during learning; however, students who view ability as something that is fixed challenge themselves to a smaller extent (Bandura, 1993, p.132). Similarly, self-efficacy can be increased through vicarious experiences, students also view their own ability to achieve a task based upon the success they socially observe in others. These vicarious experiences are proof to a learner that a goal can be accomplished. For example, if a student sees that others can be successful with understanding a text, he may be more apt to work toward mastery of the text himself. Moreover, teachers can use verbal persuasion to build student's self-efficacy for reading by providing feedback that enhances student perception of personal capability (Bandura, 1993; McTigue & Liew, 2011). Students must possess self-efficacy to believe that they can be effective readers

and this can happen through the increased use of reading strategies. While using a tool such as sketchnoting the students can visually identify the key ideas and details of the text and begin to gain confidence in their ability to comprehend the text being read on an individual or collaborative level. Similarly, the teacher can use the sketch as a tool to identify areas in which comprehension began to break down to build the student's reading skills.

Student self-efficacy is an overlooked phenomenon within most classrooms even though "self-efficacy beliefs are important influences on motivation and behavior in part because they mediate the relationship between knowledge and action" (Pajares, 1995, p. 4). Often middle school and high school teachers are so overwhelmed with teaching to the knowledge and skill standards they feel they have little time to teach social and emotional aspects of learning such as self-efficacy (Lee, 2014). Nevertheless, as McTigue and Liew (2011) argue, social and emotional learning have been shown to be directly linked to academic success. This point is also echoed by Kennedy (2009/2010) who notes,

> While providing a motivating and engaging learning experience on a daily basis is clearly complex and demanding, it is vital for promoting self-efficacy, enhancing achievement, and nurturing young readers and writers who possess both the skill and the will to read and write (p. 4).

Moreover, McTigue and Liew (2011) advocate for creating a safe classroom environment, integrating social, emotional, and academic learning, monitoring student self-efficacy, modeling self-efficacy within academic learning, providing effective

feedback, and facilitating self-evaluation and goal setting. When students feel safe, they are more apt to learn and take chances in their educational experiences. These techniques can be easily integrated into the English Language Arts (ELA) classroom with a little advanced planning, and they should be integrated because "a person with the same knowledge and skills may perform poorly, adequately, or extraordinarily depending on fluctuations in self-efficacy thinking" (Bandura, 1993, p. 119). By increasing students' self-efficacy there is potential to increase their academic achievement; therefore, by effectively implementing and using a specific reading strategy such as sketchnoting, student self-efficacy for reading could be impacted.

Motivation

Motivation is at the heart of why people choose to behave in a specific manner or to complete certain tasks; it is "any force that energizes and directs behavior" (Reeve, 2012, p. 150). Several studies indicate that student motivation to read declines as children get older leading many educators of adolescent students to wonder what can be done to combat this wicked problem (De Naeghel, et al., 2012, Ivey, 1999; Kim, J., et al, 2016). Motivation is characterized as two types, extrinsic and intrinsic. When individuals do a task for intrinsic reasons, they do it for the enjoyment of the activity or because they perceive the activity as worthwhile in itself. By comparison, activities that are considered to be extrinsically motivated are completed due to reasons outside of the activity itself and for which individuals have received some kind of reinforcement or reward. Generally, in education, teachers desire that students complete tasks for intrinsic reasons because highly engaged readers are intrinsically motivated, have a strong sense

of self-efficacy, and higher levels of reading achievement than those who do not possess these characteristics (Kennedy, 2009/2010). Nevertheless, frequently, the motivating factors for adolescents are extrinsic in nature (Neugebauer, 2014; Reeve, 2012), such as with grades in k-12 education.

Specifically, regarding reading, Guthrie and Wigfield (2000) suggest that "Motivation [in reading] can be defined as the cluster of personal goals, values, and beliefs with regard to the topics, processes, and outcomes of reading that an individual possesses" (p. 404). Student motivation for reading has been attributed to the decision about whether to read or not and the corresponding corollary is that the more students read, the greater their academic achievement (Deci & Ryan, 1994; Kennedy, 2009/2010; Morgan & Fuchs, 2007; Mucherah & Yoder, 2008). Although motivation has been directly linked to learning, the extent of the bond has been debated among researchers (Guthrie, Klauda, Ho, 2013; Neugebauer, 2014). Guthrie and Wigfield (2000) further argue that motivation is the link between frequent reading and reading achievement. By comparison, Morgan and Fuchs (2007) determine there was merely a correlation not a causation between reading skills and motivation. Neugebauer (2014) concludes that some studies, including Guthrie's research on reading motivation, fail to "explore student motivation across situated contexts" (p. 165) in which students are reading in normally occurring situations, and, therefore, the link between motivation and reading is much less clear. As a result, the debate about student motivation and reading continues despite evidence of a strong correlation between motivations and reading achievement.

Although it has been difficult to discover what really motivates students to become active learners, because motivation differs for various students, it can be deduced that student interest, student learning, and social learning are key components to motivation (Slavin, 1995; Turturean, 2013). When students enjoy what they are doing and it is relevant to them, it increases their interest and motivates them to learn (Thomas, 2014). Further, results from recent research shows learning increases when people can learn with each other (Au, 2007; Salem, 2017; Guthrie, Wigfield, & VonSecker, 2000; Kennedy, 2009/2010; Thomas, 2014; Ivey, 1999; Harmon, et al., 2016). For example, research results indicated response-based literature circles (small groups of students discuss a text based upon specific text dependent questions), Concept-Oriented Reading Instruction (a reading program that integrates science curriculum and reading comprehension together at the elementary level), and other similar approaches are commonly recommended as motivating and engaging interventions to encourage student literacy development across grades and contexts (Schallert & Martin, 2003; Guthrie, Wigfield, & VonSecker, 2000; Thomas, 2014). Nevertheless, often at the high school level students have are forced to read and learn about things they don't care about in isolation; however, sketchnoting, as a collaborative reading strategy, provides students with the opportunity to complete their notetaking in diverse ways with a partner. By providing students choice and opportunities to work with their classmates, motivation could potentially be increased to complete the reading assignments.

Reading Comprehension

Reading comprehension is an abstract and complex process of a reader extracting and constructing meaning from text (Snow, 2002). It can be difficult to clearly articulate how reading comprehension works because there are so many facets that encompass it and the process is diverse for individual students. Regardless, comprehension requires a reader to have the ability to not only decode words and understand the vocabulary, but to also assess meaning of text within a larger context and remember what the text said. Readers must have access to specific vocabulary within the text, background information on the topic of the text, and individual reading strategies to fully understand what is being read.

While the factors of reading comprehension have shifted in focus over the course of the last fifty years, among the text, the reader, and the context, the success of comprehension still remains concentrated on the reader (Pearson, 2015). The RAND Model suggests that comprehension is composed of three elements, specifically: the reader doing the comprehending, the text that is to be comprehended, and the activity in which comprehension is a part (Snow, 2002). However, Pearson (2015) argues that the model fails to put enough emphasis on the factor of context within reading comprehension. Luke and Freebody argue within the Four Resources Model that readers apply themselves differently depending on the text that they are encountering as code breaker, text participant, text user, and text analyst and use all available resources to make sense of the text (Pearson, 2015). It could be argued, however, that none of the

elements from either of the models can be left on their own or reading comprehension will break down and students will not be able to learn from the text they encounter.

It is apparent that given the complexity of reading comprehension, a reader must have cognitive capacity, motivation, and background knowledge to be able to effectively learn from a text (Snow, 2002). And those of us working in K-12 education recognize that "some readers do not come to the task with a knowledge base, inferential capacities, motivations, or dispositions sufficient to enable comprehension" (Pearson, et al., 2011, p. 55). We see a breakdown of comprehension for many readers. Several studies have been conducted over the years demonstrating the high level of impact effective teachers can have on students' reading scores (Hattie and Zierer, 2018; Pearson, et al., 2011; Snow, 2002), but effective teachers must also teach research-based comprehension strategies that are strategic to foster the fluid process of predicting, monitoring, and re-predicting (Block & Duffy, 2008). Targeted and specific reading comprehension lessons could help to increase the reading comprehension skills of students. Sketchnoting, as a reading strategy, provides students with a tool to identify the key ideas and details of a text with words or pictures as they read and then come back to the "notes" to develop a summary of the text. This process allows the student and the teacher to identify specific areas of the text where comprehension breaks down.

Specific Reading Strategies – Visualization & Summarization

Struggling readers often grapple with reading comprehension because they lack knowledge and skills with respect to specific reading strategies. Strategies are plans for reading that learners apply to texts and tasks (Pearson, Roehler, Dole, & Duffy, 1990).

By providing students with explicit reading strategy instruction and the skill to determine when to use which strategy, teachers provide them with the tools that they need to be successful and become strategic readers (Block & Duffy, 2008; Kennedy, 2009/2010; Harmon, et al., 2016; Watson, Gable, Gear, & Hughes, 2012). Strategic readers have demonstrated the ability to utilize strategies when encountering new words, to connect new knowledge to existing knowledge to make personal meaning, to evaluate their understanding of the text, to create images of what they read, as well as to summarize, synthesize, inference, and question while they read (Beers & Howell, 2005; Pearson et al., 1990). By becoming independent, strategic readers, readers have the opportunity to increase their motivation and self-efficacy for reading.

To begin, students must learn to scaffold their reading tasks using pre-reading, during-reading, and post-reading strategies to fully comprehend the text and remember the information presented. Teachers have used the pre-reading process to provide students with the necessary background information on the text to build schemata, as well as front-load any vocabulary that may be confusing to students (Boling & Evans, 2008). Consistent with this concept, visualizing helps to activate schema (the building blocks of knowledge) to develop a clear understanding of what the text is about while creating a platform to house the bigger picture, and through visualization strategies, students are able to participate in holistic learning of new material by activating both hemispheres of the brain (Pillars, 2016). Moreover, reading strategies enable students to build their comprehension skills by doing tasks such as summarizing, making inferences, connecting, questioning, and creating images (Harmon, et al., 2016). Block and Duffy

(2008) narrowed reading strategies down to those that have been researched and validated to be highly successful since 2000, and argue the following strategies to be the most effective: predict, monitor, question, image, look-backs, infer, find main ideas, summarize, draw conclusions, evaluate, and synthesize. By creating sketchnotes as they read, students are actively engaging with the text by working through the strategies of constructing images, inferring, finding main ideas, summarizing, and drawing conclusions.

Effective Practices for Reading Comprehension and Gradual Release of Responsibility

One way to learn about effective reading comprehension is by examining the practices of effective readers to determine which activities can be transferred in a general way to all readers. Duke and Pearson (2002) acknowledge that there are several techniques that have been proven to increase reading comprehension. Strategy usage is one method; however, they believe that there should be a balance in instruction between explicit reading instruction and time students spend reading for authentic purposes, or purposes that have meaning for the student. Specifically, they argue that there must be five specific components to strategy instruction: 1) There should be explicit directions on the strategy outlining when and in what circumstances it should be used, 2) There should be modeling of the strategy, 3) There should be collaborative use of the strategy, 4) There should be guided practice with the strategy, 5) There should be independent use of the strategy. Students must have an ample amount of authentic reading experiences in which to apply the strategy that is being learned. When utilized effectively students can learn

how to appropriately use specific reading strategies for their reading tasks. Strategy instruction can be effective for increasing reading comprehension when students are able to pull from their strategy toolbox while reading.

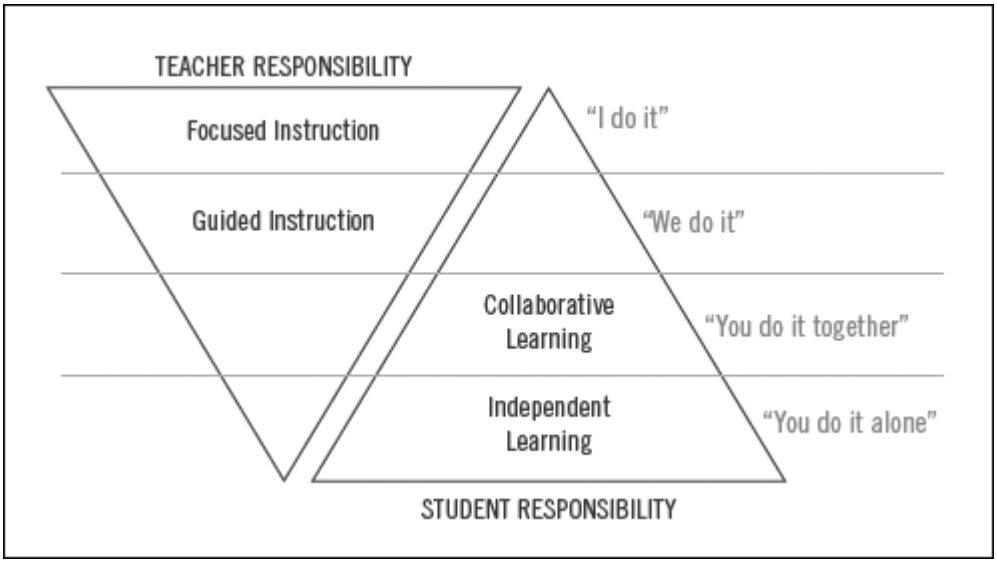
Frequently, teachers and students become caught up in the abundance of strategies that are available to increase reading comprehension. Often, it is the teacher's job to, in essence, coach students to become good readers by teaching a strategy, modeling the strategy, and providing students with the opportunity to practice the strategy until they become self-regulated readers who independently choose the best strategy to use in given situations. The gradual release of responsibility framework provides a guide to shifting the responsibility of learning from the teacher to the learner through a scaffolding scale of focused instruction to independent learning with a collaborative learning level embedded (Fisher and Frey, 2013). See Figure 2.

To develop strong, independent readers, students should be supported in reading strategies while their comprehension of the text is being monitored. Teachers need to include instruction that focuses on comprehension skills that include modeling and thinking aloud, self-questioning and reflecting, collaboration, and engaging students to become involved in monitoring their understanding and processing text meaning (Boling & Evans, 2008; Edmonds, Vaughn, Wexler, Reutebuch, Cable, Tackett, & Schnakenberg, 2009; Duke & Pearson, 2002). The goal of those who have engaged in developing reading strategies is to provide struggling readers with the tools that successful and strategic readers already utilize. The important thing to remember about the gradual

release of responsibility is that "frustrated learners already know that their teachers can complete the tasks...what a frustrated learner needs is direction and practice, with scaffolding in place to ensure success" (Fischer and Frey, 2013, p. 16). Sketchnoting, as a reading strategy for

Figure 2

Gradual Release of Responsibility Framework



Note. *Gradual Release of Responsibility Framework. Fisher, D. & Frey, N. (2013). Better learning through structured teacher: A framework for the gradual release of responsibility (2nd ed.). Alexandria, VA: ASCD.*

visualization and summarization, can be easily scaffolded through the gradual release of responsibility framework within a classroom and provides students with the opportunity to use both words and images to capture their thinking and learning while reading while also working collaboratively with their peers to comprehend text.

Students need to search for connections within the reading and monitor the text meaning. When confusion takes hold, effective readers take steps to repair

comprehension and sketchnoting provides a platform for all students to work through the reading comprehension process while learning to distinguish important information within text, synthesize information within and across text, make inferences during and after reading. This thinking process happens as students are reading text and creating the images and words that make up a sketchnote. Effective readers will continue to ask questions of themselves, the author, and the text throughout the reading process (Pearson et al., 1990). Consequently, the human brain needs processing time for effective learning to occur (Jensen, 2005), and visual note taking is one strategy that helps the brain to process text more deeply because it demands active processing and recall, our brains recall images easier than ideas (Pillars, 2016).

Theoretical Frameworks

Collaborative Learning

Collaborative learning has its foundation in Vygotsky's Social Development Theory, which recognized that at the heart of collaborative learning was the need for humans to work together to construct meaning and learn. Although there have been many variations on collaborative learning, in this study the review of research is focused on small group collaborative learning through the processing of text through sketchnoting.

Collaborative learning has provided students with the ability to work through their thinking and their learning with a partner, bringing the learning to life. When children are able to explain how they solved problems they are modeling thinking and self-regulating behaviors for others in their class to see and are demonstrating their

independence as learners (Kennedy, 2009/2010). Learning does not occur in isolation. Notably, teachers have provided students with authentic learning situations in an authentic environment that mimic real-life activities and were able to monitor and facilitate the learning as it took place, creating an environment of active literacy learning. "According to Vygotsky, children are empowered as readers and writers when they use reading and writing in authentic situations where the children are engaged in purposeful and meaningful use of language" (Doolittle, 1995, p. 4). When combining authentic learning with active learning, students increase their ability to interact effectively with text. Reading, writing, drawing, talking, listening, and investigating are examples of active literacy. Reading is an active learning activity in which students are engaged in the thinking and learning process of the activity (Salem, 2017; Ivey, 1999; Harmon, et al., 2016). Coincidentally, reading comprehension instruction is more effective when it takes place within an active literacy framework" (Harvey & Goudvis, 2007). Moreover, in other work, teachers and learners were able to assist each other throughout the problem-solving process to achieve a shared learning experience (Au, 2007; Salem, 2017; John-Steiner & Mahn, 1996). Through collaborative learning, researchers have observed an increase in academic achievement, specifically regarding literacy (Guthrie, et al., 2000, Kennedy, 2009/2010).

Vygotsky's (1978) concept of the Zone of Proximal Development has had a great deal of influence on collaborative learning. The zone of proximal development has been defined as "the distance between the actual developmental level as determined through independent problem solving and the level of potential development as determined

through problem solving under adult guidance or in collaboration with more capable peers" (Vygotsky, 1978, p. 86). In other words, "social interactions, between those less experienced and those more experienced, are at the very heart of the Zone of Proximal Development" (Doolittle, 1995, p. 5). Children bring different experiences, background knowledge, and personalities to the learning task and the challenge is to ensure children are able to contribute and benefit from the learning experience. Wood, Roser, and Martinez (2001) emphasize this aspect of learning when they said, "It is through interactions with others--peers and adults--that children are able to expand their thinking, broaden their conceptual knowledge, and express themselves in language" (p. 104). Regardless of the collaborative model guiding the framework of an activity effective reading programs allow for cooperative learning (Slavin, et al., 2008).

Students within a classroom have the potential to interpret an identical text in different manners because those students bring with them varying attitudes, ability levels, and experiences. They construct their learning through different methods, but it is developed none-the-less. Through the process of collectively constructing their sketchnotes in a group, students encounter multiple interpretations and explanations of the text; therefore, as previously indicated, student self-efficacy for reading can be increased through the vicarious experiences of others and student motivation can be increased through social learning (McTigue & Liew, 2011; Slavin, 1995; Turturean, 2013).

Self-determination Theory

Motivation is the key component of self-determination theory (SDT); a theory developed by Richard Ryan and Edward Deci. Ryan and Deci (2000) believe that, "People are said to be *motivated* to the extent that they intend to accomplish something--that is, to the extent that they have a purpose. An intention involves the desire to attain some future state along with a means to attain that desired end" (p.3). When intrinsically motivated (noted as autonomous motivation by Ryan and Deci), students learn for the love or joy of learning, not for extrinsic (noted as controlled motivation) rewards that might be present. Self-determination theory designates intrinsic and extrinsic motivation as ends of an underlying continuum that determines the degree to which learners choose to be engaged in a particular task (Ryan & Deci, 2000). The learning environment should provide a balance of engaging activities, motivating incentives, and personal challenges that ensure self-involving motivation and continual improvement (Bandura, 1993).

According to Ryan & Deci (2000), autonomously motivated behaviors are done because a person has interest in the activity while control motivated behaviors are done because there are some consequences attached and they can vary in the extent to which they represent self-determination. Although intrinsic motivation is what educators strive for from their students, most educational activities are completed for primarily extrinsic reasons. This is not entirely bad news, though; for example, students could be working hard to learn vocabulary because they know they need to use it to be competent in college or to get the jobs they wanted. Although this is an example of extrinsic motivation, it still produces the positive effect of students working hard to learn. As Deci & Ryan (1994)

acknowledge, "Individuals have an innate tendency to internalize the regulation of extrinsically motivated behaviors that are useful for effective functioning in the social world" (p. 9). DeNeaghel (2012) takes this idea and applies it to reading by noting that even if students aren't interested in the topic of the reading they could still be intrinsically motivated if they find it relevant to their lives in some way. Within a classroom setting this motivation must be cultivated by classroom teachers.

Ryan and Deci (2000) maintain that teachers need to create the groundwork for facilitating internalization by providing belongingness and connectedness in classrooms and creating an opportunity for students to feel respected and cared for by the teacher. In other words, students are motivated by emotional reasons as well. If students adopt and internalize a goal they will be more apt to succeed at accomplishing it (Ryan & Deci, 2000). If students have had negative emotional experiences with reading in elementary or middle school, it could affect their self-efficacy and motivation for reading in high school, which may, in turn, affect students' reading comprehension achievement (Schallert & Martin, 2003). Moreover, beginning readers who struggled with reading tasks such as decoding in the past have had greater demands placed upon them when reading, which has made the act of reading more difficult. They may avoid reading because they do not view it as enjoyable. These students may have made the determination they were not good at reading (Schallert & Martin, 2003) and "to help struggling readers become proficient, highly motivated readers, teachers must continuously work to help change students' 'can't do' attitudes about reading into 'can-do' attitudes" (McCabe & Margolis, 2001, p.45).

Motivational support has been provided in classrooms by teachers to increase academic achievement. For example, in a study conducted by Guthrie and Klauda (2014), which included student choice *and* collaboration, the researchers found that motivational support and strategy instruction can increase student achievement. Kennedy (2009/2010) found similar results during her research on literacy instruction in a collaborative learning environment with elementary students. Within the constructs of self-determination theory, Ryan and Deci argue that when students are satisfied with the human desires of competency, autonomy, and relatedness they are more motivated, so teachers need to create an environment that supports these needs (Pink, 2009). When scaffolded effectively with the incorporation of collaborative opportunities, the use of sketchnoting, as a reading strategy, could build student feelings of competence and autonomy by relinquishing specific controls over the reading process and increasing engagement in the text and activity.

Schema Theory

Written letters and words, in and of themselves, carry no inherent meaning without a person possessing prior knowledge and understanding of the symbolism and meaning of the words once they are created. Thus, schema serve as complex mental frameworks into which information is assimilated. "'Schema' is a theoretical label for cognitive structures posited as the basic unit of knowledge and described as an organized, interconnected set of nodes that represent abstracted regularities in one's experience" (Schallert & Martin, 2003, p. 38). After being introduced to psychology by Bartlett in the early 1930s, researchers such as Rumelhart, Carroll, and Hudson linked schema theory to

reading in the early 1980s using the premise that readers must have had sufficient background knowledge to fully comprehend text (An, 2013).

Students activate schemata whenever they take in new information; new learning must have been related to prior learning of a topic (Watson et al, 2012). Readers bring different schemata to a text in the form of their previous learning and experiences, which opens the door to varying interpretations of identical text. Thus, schemata have powerful influences on comprehension as noted in the following quote, "Our schema—the sum total of our background knowledge and experiences—is what each of us brings to our reading ... Connecting what readers know to new information is the core of learning and understanding" (Harvey & Goudvis, 2007, p. 17). It is the responsibility of the learner and the teacher to build schemata by making connections between what is 'old' to what is 'new.' Every reader creates a personal stamp on every act of reading we participate in (Pearson et al., 1990).

When students take in new knowledge or work on a new task they are constrained by limited cognitive resources; however, as students repeat new learning and build skills, the new learning becomes mastered and automatized (Schallert & Martin, 2003, p. 36). When automatized, reading can become an enjoyable experience for students and lead to increased motivation and self-efficacy regarding reading. Struggling readers in later adolescents need instruction that focuses on creating models that allow them to effectively integrate their knowledge, experience, and strategies to comprehend the things they read (Cantrell et al, 2010). Thus, instruction has been necessary to foster better

reading achievement and has been provided to students in the form of teaching direct and explicit reading strategies.

To use strategies effectively, teachers must provide students with the opportunity to build their schemata through strategic reading strategies in order for them to become strategic readers (Pearson et al., 1990). Thus, teachers create environments that are conducive to increasing reading comprehension by building background knowledge and by using questioning and connecting text processes (Salem, 2017). Many older struggling readers can read accurately, but they do not always comprehend what they are reading (Biancarosa & Snow, 2004); therefore, by utilizing schema theory teachers have built upon student's current knowledge to increase their reading comprehension. The process of sketchnoting provides students with the opportunity to access and build upon their background knowledge through active engagement with the text. When they are asked to create mental images of the words they are reading and place them in a sketchnote, they are drawing from their previous knowledge and experience to develop connections to what they are reading.

Implications from the Theoretical Perspectives and Related Literature

Consistent with Bandura's (1993) and Deci & Ryan's (1994) work, when students are motivated to complete a task and feel they have the potential to accomplish it, they have a better chance of completing the task successfully, which also increases their self-efficacy. Student motivation can be increased through the teaching of reading strategies that allow students to feel competent while reading (Guthrie, Wigfield, & VonSecker, 2000; Guthrie & Wigfield, 2000; Ivey, 1999; Wingfield & Eccles, 2000). Specifically,

with regards to reading, students need to be presented with situations in which they can achieve success even if they have failed in the past (Ryan & Deci, 2000; Schallert & Martin, 2003) to ensure future progress with comprehension. Teachers can provide students with the opportunity to build their schemata and reading skills through the direct instruction of explicit learning strategies such as sketchnoting and creating collaborative learning environments in which students feel safe to learn and work together (Cantrell et al, 2010; Kamil, 2008; Slavin et al., 2008; Watson et al., 2012). This can be facilitated within the classroom experience by providing a motivating and engaging experience for the students.

As noted, there have been several studies to determine what can be done to bridge the gap between student achievement and college and career readiness regarding reading. Specifically, Cantrell, Almasi, Carter, Rintamaa, and Madden (2010) looked to examine the impact of teaching reading strategies to struggling students on their academic achievement. The researchers used the Learning Strategies Curriculum (LSC) as the intervention to provide students in both the 6th grade and 9th grade with reading strategies that were intended to increase reading comprehension. The data produced helped the authors to draw the conclusion that after one year of receiving the intervention the students in 6th grade did significantly better on their comprehension test than the control group who did not receive the intervention; however, there was no significant change for the students who received the intervention in the 9th grade possibly because older struggling readers may need instruction that focuses on situational learning that fosters the integration of their knowledge, experience, and strategies (Cantrell, Almasi,

Carter, Rintamaa, and Madden, 2010). I would like to use my study to build upon this study because while Cantrell, Almasi, Carter, Rintamaa, and Madden (2010) demonstrate that the teaching of explicit reading strategies may not be enough to increase comprehension skills in high school students, there has been little research on sketchnoting as a specific reading strategy to actively engage students with the reading task. Sketchnoting is different from other reading strategies because it provides the ability for the student to individualize his sketch based upon the connections made to his background knowledge, create a sketch of what he determines are the key ideas and details of the text, and utilize a unique platform: sketchnoting as a reading strategy.

Instruction of reading strategies alone is not enough to benefit all readers, therefore, a strategy like sketchnoting to increase motivation and self-efficacy for reading should be added to ELA curriculum. Mucherah and Yoder (2008) completed a study with middle school students in which they determined that reading motivation is linked to higher standardized test scores in reading, and Kennedy (2009/2010) linked motivation, engagement, and self-efficacy as necessary for achievement gains in students. John T. Guthrie has authored many studies with other researchers on the positive effects of Concept-oriented Reading Instruction (CORI). While the studies focus specifically on informational reading for upper-elementary and middle school students in science and social studies, at the heart of the instruction is the use of specific reading strategies to increase student motivation, engagement, and self-efficacy. Similarly, within all of the studies that were conducted, it is evident that there is an association between the intervention and increases in motivation, engagement, and achievement regarding reading

(Guthrie & Klauda, 2014; Guthrie, Klauda, & Ho, 2007; Guthrie, McRae, & Klauda, 2007; Guthrie, Wigfield, & VonSecker, 2000). Therefore, I hope to build upon this idea of cooperative learning and the teaching of a sketchnoting as a means to increase student reading achievement at the high school level. The research shows that response-based literature circles, CORI, and other similar approaches are commonly recommended as motivating and engaging interventions to encourage student literacy development across grades and contexts (Guthrie, Wigfield, & VonSecker, 2000; Schallert & Martin, 2003; Thomas, 2014). Sketchnoting as a reading strategy provides students with a means to think critically about a text while completing the sketchnote in a cooperative learning environment.

CHAPTER 3

METHODOLOGY

Setting

The study took place at Beaver Dam High School in Beaver Dam, Wisconsin. There are currently 1113 students that attend the 9-12 school. Although many students have called Beaver Dam Unified School District home for their educational career, there are many other students who are more transient in the district. Approximately 43.2% of our students qualify for free or reduced lunch. The racial/ethnic makeup of the district is: 83.3% Caucasian, 12.1% Hispanic, 2.7% African American (not Hispanic), 1.0% American Indian, and 0.9% Asian or Pacific Islander. Approximately 13.1% of the student body is receiving special education services and 4.6% have limited English proficiency. The students have a wide-array of educational opportunities at Beaver Dam High School including 20 Advanced Placement courses and over 15 dual credit-transcript courses. Beaver Dam High School is a mid-sized school with a vision on academic achievement and success.

Participants

The participants included students who were enrolled in my English 11 classes. English 11 is a required class for all 11th grade students at the school. There is a total of nine teachers in the English Language Arts department and five of us teach at least one section of English 11. During the 2019-2020 school year there were nine sections, and I taught two sections. Across both sections, there were 44 students, of which 30 provided parental permission and student assent for the research. Eight students were excluded

from the analysis: One student was dropped after she stopped coming to school for medical reasons, two were unidentifiable due to inconsistencies in their use of the student identifier, and five participated in less than 50% of the intervention (due to absences and/or refusal to complete the intervention in class). There were 15 female participants and seven male participants, two were identified as Gifted and Talented, one had a 504 plan, one received special education services, and one was identified as an English Language Learner. Students who have a 504 Plan are students who have been identified with a disability but do not require specialized instruction to be successful but do require accommodations to provide equitable access to successful learning. As a whole, my classes are demographically similar to other sections of English 11 and representative of the school as a whole.

From the group of participants, four students were chosen to participate in a case study. The students were chosen from one class period (to ensure they were receiving a similar educational experience with regards to the implementation of the intervention) and were chosen to represent one of each of the four ACT Aspire Readiness Categories: (1) Needs Support, (2) Close, (3) Ready, and (4) Exceeding with regard to their 10th grade ACT Aspire scores. Of the case study students, there were three female participants and one male participant. As the action researcher, I have sixteen years of teaching experience with four of those years teaching at Beaver Dam High School.

Role of the Researcher

Within this action research study, my role of the researcher was participant and observer. I was directly working with the students to administer the interventions that

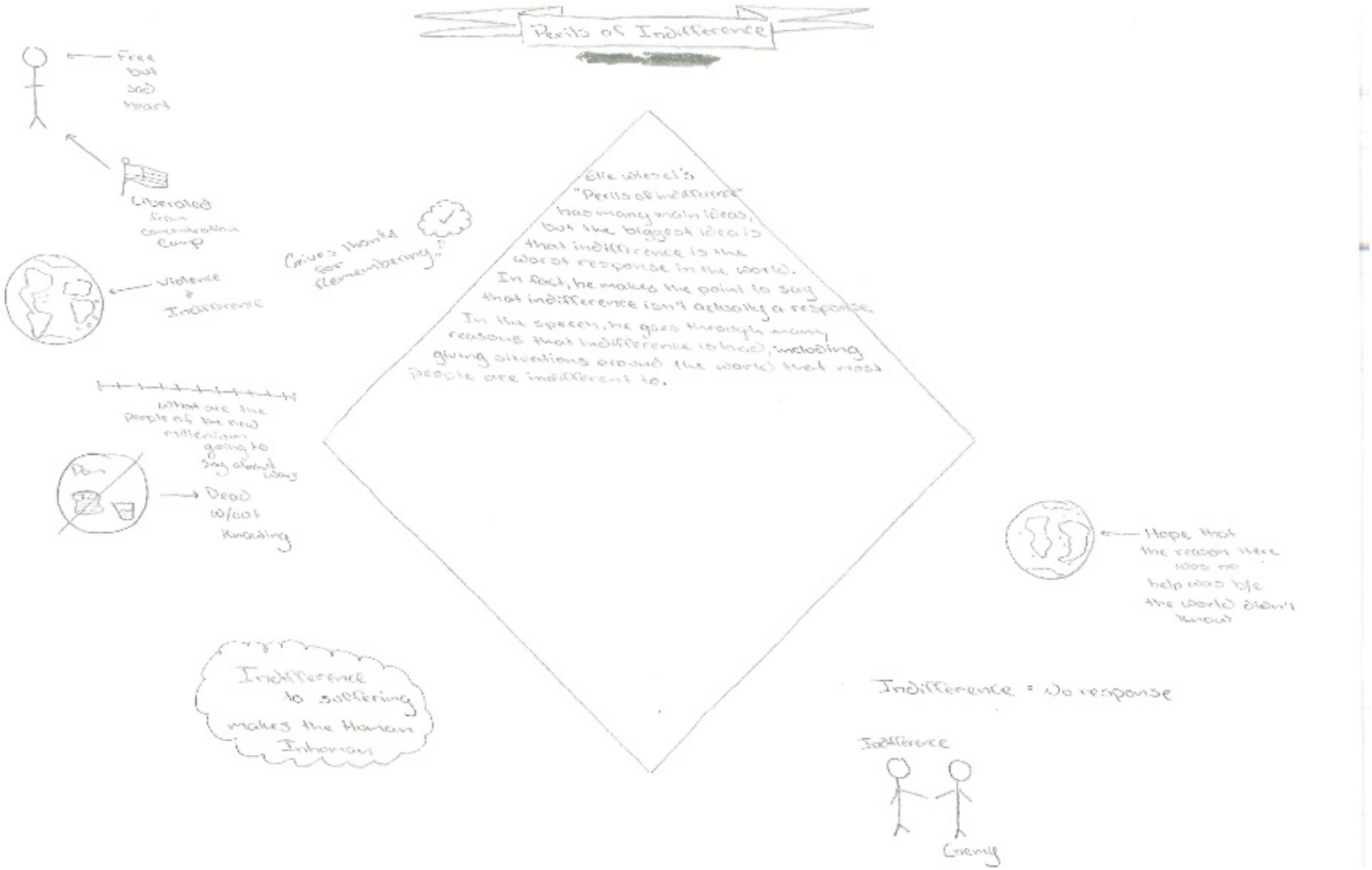
they received, and therefore, I was directly participating with the students during the research process. I administered the surveys and also acted as the interviewer. As the teacher researcher I was responsible for establishing the classroom environment, developing and instructing the students regarding the daily activities and intervention, and assessed student progress. As the research shows, strategy instruction alone is not sufficient, so I worked directly with the students daily to build and cultivate an active learning environment in which students were engaged in the completion of the reading strategy. Throughout this process I was classified as an insider researcher in pursuit of improved practice for my students within my building.

Intervention and Procedure

The goal of my action research study was to incorporate a reading strategy that met multiple student reading needs, increased student engagement and motivation, and positively influenced student reading comprehension. It was important that the strategy being taught could be easily and effectively taught, modeled, and practiced within an English 11 classroom and had the potential to increase motivation, engagement, and feelings of competency within the students. The students were directly taught the specific reading visualization reading strategy sketchnoting to achieve this goal. As previously defined, sketchnotes are created when students take information, process it, and place their thinking on paper in the form of a visual sketch of ideas. Sketches can include writing, doodling symbols, drawing images, and any combination of the three. There is no right or wrong way to complete a sketchnote, so the students are left with a great deal of autonomy when creating them. See Figure 3.

Figure 3

Student Sample of Sketchnoting with Summary



Using Duke and Pearson's (2002) model for comprehension instruction as well as Fisher & Frey's Gradual Release of Responsibility Framework (2008) as a guide for the innovations, students received an explicit description of the strategy and how to best utilize it, were taught the strategy, had the strategy modeled for them, had opportunities for collaborative use of the strategy, and practiced independent use of the strategy. I provided a specific lesson (one class period for approximately 20-30 minutes) on what sketchnoting is as well as the possible benefits of utilizing the strategy not only in English class, but in other classes and life. This instruction complimented the instruction they were already receiving on summarization. By helping the students to understand "the why" of the innovation, I expected to increase their buy-in and use of the strategy (Heath & Heath, 2010).

After the introduction of the strategy, the idea of sketchnoting and summarizing was scaffolded with the students over the course of the first unit of approximately 5 texts for approximately 8 weeks. The Gradual Release of Responsibility Framework guided the scaffolding of the strategy (see Figure 2). While not every class period was designated for reading and strategy use, the students were expected to work on the sketchnote and summary process when reading each text. Through the initial modeling process, I guided the students on what to visualize, specifically with regards to characters, setting, and main events. They learned and practiced how to visualize and summarize from large to small by starting with general ideas from the text and moving on to more specific details of the text. After the modeling process, the students utilized collaborative learning to work together to learn and practice the skill of visualization with their

sketchnotes when reading approximately three texts. Figure 4 is an image of the students working together on the completion of their reading and skechnoting of a text.

Figure 4

Students Working Together to Read and Sketchnote Their Text

As the students learned how to create sketchnotes, I continued to provide clarity and purpose for the innovation and motivation to persevere by building feelings of competence in the reading and completion of the sketchnotes and summary through verbal praise and feedback. The final step of the scaffold process was for the students to independently use the sketchnoting and summarization reading strategy to work through their assigned text. Even after the students reached independence with regards to the strategy, they were be expected to share and collaborate to ensure that ideas are discussed, monitored, and revised as appropriate. It was my responsibility to monitor student progress and work with students to build their schema to increase connections and reading comprehension through the process. After the students finished each text

they were be expected to provide evidence of a sketchnote as well as a written summary of the text using their sketchnotes as their guide. Table 3 provides an illustration of the texts that were read, whether the sketchnoting process was modeled or completed without guided instruction, and the number of days spent on reading and sketchnoting each text.

Table 3

Texts Read, Manner of Sketchnote, Days Spent on the Text

Text Title	**Sketchnote Modeled or Completed by Students Collaboratively/Independently**	**# of Days Spent Sketching**	**Date of Text Introduction**
To Build a Fire by J. London	Modeled & Collaborative	5 Days	9/13/19
The Crucible: Act I by A. Miller	Modeled	7 Days	10/1/19
The Crucible: Act II by A. Miller	Modeled	4 Days	10/16/19
The Crucible: Act III by A. Miller	Modeled	4 Days	10/24/19
The Crucible: Act VI by A. Miller	Collaborative/Independent	2 Days	10/31/19
Half-Hanged Mary by M. Webster	Collaborative/Independent	1 Day	11/8/19
Perils of Indifference by Elie Wiesel	Collaborative/Independent	2 Days	11/22/19
Malala's Speech to the United Nations by Malala Yousafzai	Collaborative/Independent	2 Days	12/5/19

The texts used in class were dictated by a (district-wide/school-wide/state-wide curriculum). It is important to note that the texts used for this cycle of data collection was different from previous years. In previous cycles of the action research the students read *Fahrenheit 451* by Ray Bradbury during the first semester and *The Crucible* by Arthur Miller during the second semester. These two texts were swapped during the 2019-2020

school year. This change also impacted how the students read the text. Since *The Crucible* is a play, I opted to have students read the text out loud. Typically, I do not do any reading of whole texts during class. Instead when teaching I will pull out text samples to do explicit direct instruction on a strategy or skill and have the students practice on their own while silently reading the text. Students are provided time during class to work on reading assignments during class so that I can help them through any of the learning they may struggle with. This change may have impacted how students viewed and used sketchnoting as a strategy.

Instruments

Student Survey. To determine the current practices and perceptions on reading and ELA skills, students were given a pre- and post-survey that included both open-ended and closed questions. The survey was a 33-item questionnaire, administered through in a Google Form, that the students completed the first week of the term and the last week before winter break. The survey consisted of 25 6-point Likert scaled items that encompassed the three constructs of self-efficacy, motivation, and strategy use. The Cronbach Alpha score for the survey is identified as good with a score of 0.858 and a factor analysis was completed with each construct measuring within the "acceptable range". The survey also contained eight open-ended questions for students to provide information on their interests and their perceptions on reading. Examples of these questions were: *What benefits do you see in reading?* and *Do you enjoy reading things other than books? What are they?* A copy of the survey can be found in Appendix C. The goal was to develop an understanding of the trends of the students' reading patterns

as well as their attitudes toward reading (Creswell, 2015), as the information gained through this instrument included interest, perceptions, motivation, and self-efficacy data that can be analyzed to determine change from the beginning of the intervention to the end.

Student Interviews. Targeted semi-structured interviews were conducted with each of the four case study students at the end of the intervention to gain a deeper insight into the students' motivation and self-efficacy for reading than what the survey could provide (Creswell, 2015). Of the four interviews, the minimum was 3.06 (in minutes) in length, and the maximum was 8.3 (in minutes) with a mean of 5.5 and a standard deviation of 1.88. The interviews were conducted during the school day. An example of one of the interview questions was: *Has sketchnoting helped you to be a better reader?* This process enabled the students to freely describe their reading habits through their perspective (Brinkmann & Kvale, 2015) with the goal of understanding student learning through a constructivist self-determination lens. However, there is a potential for bias in that as the teacher and inside researcher, the students may feel less inclined to be honest in their responses. It was my responsibility to ensure that the students felt safe to share their opinions in a non-judgmental, non-discriminative manner by ensuring that the students were reminded that their responses would not be taken personally, would not affect their grade, and would be used for research purposes only.

Student Observations. Student observations were utilized as an instrument to measure the student participation in sketchnoting collaboratively or individually as well as to measure student engagement with sketchnoting as the strategy was taught

throughout the intervention process. The observation form was a printed spreadsheet that required me to observe student participation during the intervention and student use and practice with the reading strategy. The form was completed each time the strategy was used collaboratively or independently within the classroom throughout the semester, not during the modeling phase. Five student observations forms were completed for each of the students (there was a substitute teacher the day of the sixth text sketch day). These observations aided in determining the changes that occurred within student motivation for reading course material and completing the reading strategy, as well as any possible correlations between strategy usage and post survey responses or changes in post reading comprehension assessments.

Student Sketchnote Assessment and Documents. Each of the participants were asked to read and sketchnote each of the required texts for the class. There were eight texts over the course of the intervention period. Each participant's sketchnote was assessed on a 3-point scale for both the key ideas as well as the details. Table 4 is an illustration of the Sketchnote Rubric.

Table 4

Sketchnote Scoring Rubric

Score	Key Ideas from the text identified in the sketchnote.	Details and Evidence from the text identified in the sketchnote.
3	Student identified all Key Ideas from the text.	Student identified the majority of the Details and provided Evidence from the text.
2	Student identified several Key Ideas from the text.	Student identified several Details and provided examples of Evidence from the text.
1	Student identified only a few Key Ideas from the text.	Student identified only a few Details and Evidence from the text.

Sketchnotes created by students in the case study were also analyzed qualitatively as objects. When reviewing the sketchnotes I observed whether the student sketchnotes were completed with evidence of not only their reading, but of their thinking of their reading, and their ability to understand the key ideas and details of the text. I assessed the sketchnotes based upon specific factors affecting comprehension such the student identification of specific key ideas and details from the text.

Student Sketch Reflections. After each sketchnote, students were provided the opportunity to provide input through a two-question survey. The first question was a Likert scale question regarding the perceptions of completing the sketchnote with 1 being, "Using sketchnoting did not help me to understand the reading better at all," and with 5 being, "Using sketchnoting while reading was essential to me understanding the text." The second question gave students the opportunity to provide optional feedback based upon the prompt: Is there anything else you would like to add? The survey was optional and completed either during or after class.

Student Reading Comprehension Assessment. The case study students also completed pre- and post-intervention reading assessments in which they were given a passage to read and reading analysis questions to answer to determine what change, if any, resulted in their reading comprehension performance after the intervention. The Qualitative Reading Inventory (Leslie & Caldwell, 2016) was utilized to estimate student reading comprehension. While it is not a norm-referenced or standardized means of measuring comprehension, it provided me with valuable information about each student's comprehension based upon student unaided recall, questions without look-backs, and

questions with look-backs with both implicit and explicit questions (Leslie & Caldwell, 2016). It was administered individually to students either before, during, or after the school day.

Student Reading Skills Assessment. All participants completed a reading skills test in September, November, and December. Several reading skills were assessed pre/post to determine any changes that occurred in the student's reading comprehension skills. Only those students who completed all three assessments and completed at least 50% of the sketchnotes were included in the data analysis. See Figure 5.

Data Analysis

Qualitative Data Analysis. Qualitative data consisted of interview transcripts, sketchnotes, and descriptive data from the student survey. All interviews were audio-taped with the permission of the participants and transcribed. The interview process was spiraled in that student interviews were transcribed when completed to identify key patterns and prepare for the next interview (Hennink, Hutter, & Bailey, 2011). A constant comparison method was employed for all qualitative data analysis in which I started with general codes and moved to focused codes. After initial coding, the data was analyzed to determine the results.

Quantitative Data Analysis. Quantitative data consisted of numeric observation data, student survey results, and the Qualitative Reading Inventory (QRI). All of the quantitative data were analyzed using the statistical analysis software SPSS. The goal of the data analysis was to measure change in student motivation and self-efficacy as well as

change in student reading comprehension levels. See Appendix B for complete table of research questions and measures.

Figure 5

Timeline and Procedures for the Study

Timeline and Procedures for the Study
Early September (Week 2 of school year)
*Obtain Parental Permission and Student Assent for Research
Mid-September (Week 2-4 of school year)
*Administer Pre-Intervention Student Survey *Establish Student Population for and Administer Qualitative Reading Inventory *Introduce concept of sketchnotes to students. -Start with Why - teach brain science include information processing, storage, neuron connections -Practice sketchnoting (Use Pillars (2016) practice guide) *Begin the scaffold of sketchnotes -Front-load text. Ask the students to create an image that represents the theme word.
Late September-Early October (Week 4-5 of school year)
-Provide students with opportunities to collaboratively develop sketchnotes for text
Mid-October-Early January (Week 5-18 of school year)
*Continue Scaffolding sketchnotes with text in class with collaborative as well as individual development of the visualization strategy *Complete qualitative analysis of student sketchnotes
Mid November
*Complete Semi-Structured Student Interviews
End of December (Week 16 of school year)
*Administer Post-Intervention Student Survey *Administer Post-Intervention Qualitative Reading Inventory

CHAPTER 4

DATA ANALYSIS AND RESULTS

In this chapter, I present results from my mixed methods approach to answer the following research questions:

RQ 1: How and to what extent does implementing sketchnoting in an English 11 classroom affect students' motivation and self-efficacy for reading course material?

RQ 2: How and to what extent does implementing sketchnoting affect students' reading comprehension?

RQ3: What are the impacts of adding sketchnoting into an English 11 classroom?

Data Definitions

As mentioned in Chapter 3, there were seven instruments used for this study: (1) Pre- and Post-Reading Survey, (2) Qualitative Reading Inventory (QRI), (3) Reading Skills Assessment, (4) General Observations, (5) Sketchnote Assessment, (6) Interviews, (7) Student Documents. Each of the measures can be found in Appendix C.

Participants

As previously noted, data from 22 students is included in the following analysis. The participants were all students in my two sections of English 11 class that was offered during the 2019 fall semester. There were seven male students and 15 female students. Twenty of the students identified ethnically as White and two students identified as Hispanic. Table 5 provides descriptive data on the participants' ACT 10th Grade Aspire Scores.

Table 5

ACT 10th Grade Aspire Data

ACT 10th Grade ASPIRE Scores

	Male	Female	Total
In Need of Support	0	3	3
Close	2	6	8
Ready	2	5	7
Exceeding	1	1	2
No Score	2	0	2

Student Reading Pre/Post Survey

As mentioned in Chapter 3, all students were asked to complete a pre- and post-survey about their reading practices and perceptions. The reading survey consisted of 33 items. There were 25 closed-ended items to measure three constructs: reading motivation, self-efficacy for reading, and reading strategy use. The survey also contained eight additional open-ended questions on their reading habits and perceptions on reading. The Student Reading Survey can be found in Appendix B.

There were 27 pre-assessments used to calculate the validity of the survey. The survey is a modified version of Wigfield and Guthrie's (1995) MRQ survey. The survey for this study was designed to measure student reading practices and perceptions; however not all the items within the survey had the potential to be impacted by the sketchnoting intervention. For example, seeing a parent reading at home has been shown

to have a positive effect on student reading motivation; however, the student doing the sketchnoting reading strategy at school would not necessarily be affected by the student's parent's reading habits. Therefore, that question was not included in the sub-construct of motivation. Using SPSS, I determined the descriptive statistics of the sub-constructs of motivation, self-efficacy, and strategy usage that could potentially be impacted by the intervention. Student motivation (motivation construct) was measured using nine questions within the 33-item pre- and post-survey, with three questions potentially having a direct impact using sketchnoting as a reading strategy (noted as motivation sub-construct). Student self-efficacy (self-efficacy construct) was measured by six questions within the same survey, with three of the six questions (self-efficacy sub-construct) potentially being directly impacted by using sketchnoting as a reading strategy. Student strategy use (strategy construct) was measured by ten questions within the survey, with four of the ten questions (strategy sub-construct) potentially being directly impacted using sketchnoting as a reading strategy. Table 6 provides descriptives of the individual sub-constructs.

Table 6

Pre- and Post-test Scores on the Constructs Potentially Impacted by the Intervention

Construct		Pre-test		Post-test	
	Total Possible Score	M	SD	M	SD
Reading Motivation	15	12.86	1.91	12.41	1.94
Self-Efficacy for Reading	15	11.36	2.51	11.59	1.65
Reading Strategy Usage	20	12.05	2.82	12.50	3.26

Using SPSS, I computed Cronbach's α to determine reliability of the subscales. The pre-test response was 0.659, indicating questionable reliability; however, previous tests of Cronbach's α, done during earlier research cycles, resulted with the survey having a score of 0.74 which indicates acceptable reliability.

I coded the open-ended items of the survey based upon the constructs of Reading Motivation, Self-Efficacy for Reading, and Reading Strategy Usage. Table 7 provides the questions that correspond to each of the constructs of Motivation, Self-Efficacy, and Strategy Usage within the open-ended questions of the survey.

Table 7

Reading Survey Open-Ended Questions

Motivation Questions	Self-Efficacy Questions	Reading Strategy Questions
Describe the benefits you see in reading.	Describe what is easy about reading for you.	When you struggle with your reading describe what you do to overcome it.
Describe the reasons you read.	Describe what is hard about reading for you.	
Do you enjoy reading things other than books? If so, what are they?		

I identified thirteen codes within the reading motivation construct, fourteen codes within the self-efficacy for reading construct, and twelve codes within the strategy usage construct of the survey. The individual codes can be found in Appendix D. The codes were grouped into themes as identified in Table 8. Within the Student Pre-Post Reading Survey over 33% of the students (7 out of 22) changed what they do when they struggle with reading. Before the intervention, two students stated that they did nothing to help

themselves or they got upset when they didn't understand what they were reading. After the intervention, they both reported being more proactive in their reading by taking a break and rereading or asking for help when they didn't understand the text.

Table 8

Themes Identified within the Survey Constructs

Motivation for Reading	Self-Efficacy for Reading	Reading Strategy Usage
1. Students read to grow and learn.	1. Students read when they feel like a good reader.	1. Students ask for help when they struggle with reading.
2. Students read to get better/good grades and test scores.	2. Students read when they have interest or find enjoyment in the text.	2. Students re-read when they struggle with reading.
3. Students read because it is enjoyable and a healthy use of time.	3. Students read when they understand the text and students don't read when they don't understand the text.	3. Students take a break and come back to the text when they struggle with reading.
4. Student don't like reading or don't read.		4. Students look things up when they struggle with reading.
		5. Students ignore words, do nothing, or stop reading when they struggle with reading.

Over half of the students (n=13) changed their responses between the pre- and post-survey on what they believed to be easy and hard about reading; of those that changed their responses, half of the students (n=5) changed their belief that the words were what was difficult about reading to higher level activities such as comprehending and

analyzing. The reasons the students provided for reading were minimal with only 5 of the 22 students changing their responses for why they read. Some examples include Mikayla who stated at the beginning of the intervention period that she read for "enjoyment, to lose myself in the book." However, at the end of the intervention period she stated that she read "to better myself." Parker completely altered their responses from a pre-intervention response of "I don't read because I don't find it enjoyable" to a post-intervention response of "for fun."

Student Reading Skills Assessment

I gave each of the participants a pre-reading skills assessment and a post-reading skills assessment. The purpose of this measure was to determine the impact, if any, of sketchnoting on the reading skills of identifying key ideas and details within a text. I gave the students a "cold" read text that they had not seen before and asked them to respond to three questions that help to identify if students grasp the key ideas and details based upon the text. I asked the following question to determine their ability to identify and analyze characterization in the text: "How is the main character (speaker) developed? Use direct and indirect characterization to explain how the character contributes to a reader's complex understanding of the text. Support with text evidence." I asked the following question to determine their ability to identify and explain how conflict is created and developed in the text: "What is the most impactful type of conflict in the story and why? Support with text evidence." And I asked the following questions to determine their ability to identify the main idea of the text: "What do you believe to be the main idea of the story? Why do you believe this? Support with text evidence or

detailed inferences." Table 9 provides a description of the student total sum scores for each of the three skills assessment questions as well as the total assessment.

Table 9

Student Reading Skills Assessment (N=22)

		Student Pre-Reading Skills Assessment		Student Post-Reading Skills Assessment	
Construct	Total Possible Score	M	SD	M	SD
Characterization	4	1.25	1.58	3.27	1.20
Conflict	4	1.09	1.28	2.54	1.46
Main Ideas	1.5	1.22	.59	1.28	.53
Total Assessment	9.5	3.56	2.72	7.04	1.83

Description of Intervention Data

Throughout the intervention I used the gradual release of responsibility method of teaching sketchnoting as a reading strategy to the students. When I introduced the strategy, I began with direct focused instruction and finished with collaborative instruction with the first text.

General student observations. Student observations were utilized as an instrument to measure the student participation in sketchnoting collaboratively or individually as well as to measure student engagement with sketchnoting as the strategy was taught throughout the intervention process. Each of the class periods that the

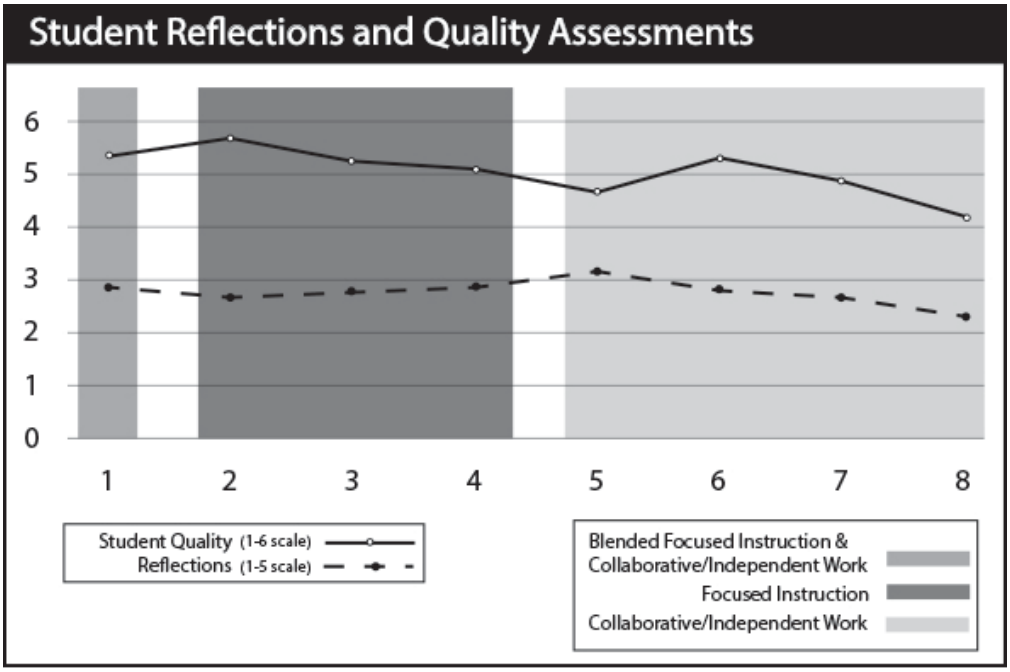
students completed their sketchnotes collaboratively or independently, I completed the student observation form. The observation form was used to measure student use of and engagement with sketchnoting as a reading strategy as well as whether each student completed the sketchnote individually or collaboratively. Five student observation days occurred throughout the duration of the research period. While students were independently working on their sketchnotes, I recorded observations of whether they were on task during the activity on a scale of 1-5. Students who were always on task received a score of 1 and students who were never on task received a score of 5. The complete observation form can be found in Appendix E. While there were some students off task at times, the lowest mean score for the class during any specific class period of sketchnoting was 4.10 out of 5 possible points. This indicated, overwhelmingly, that the students were on task and completing their assignment during the designated class time for reading and sketchnoting. I also observed that even when given the opportunity to work collaboratively on the sketchnotes, many students chose to work alone with over 75% of the students choosing to work independently instead of collaboratively.

Student sketch reflections. After each reading assignment and sketchnote completion, I asked the students to complete a survey of their perception on the effectiveness of sketchnoting on their ability to understand the reading assignment. There was one question in the survey: "Was this experience of sketchnoting this text meaningful?" The students chose from a 1-5 Likert scale with 1 being, *Using sketchnoting did not help me to understand the reading better at all* and with 5 being, *Using sketchnoting while reading was essential to me understanding the text*. I also

provided the students with the opportunity to give optional feedback based upon the prompt: “Is there anything else you would like to add?” Figure 6 illustrates the data for student reflections (on the scale of 1-5) and the quality of the sketchnotes (on the scale of 1-6) they created throughout the intervention period. While each measure is on a different scale it is important to note the changes in student responses on the sketch reflections as the intervention went on throughout the semester. Within the Likert scale ranging from 1-5, the student average for the sketch reflection was 2.76. When looking at the reflection data as the research period moved from beginning to end, 11 students acknowledged no change or an inconsistent change, three students reported a negative change, and seven students reported a positive change in the meaningfulness of their experience of sketchnoting the text.

Figure 6

Student Reflection Scores and the Quality of the Sketchnote Completions



Within the Likert scale ranging from 1-5, the student average for the sketch reflection was 2.76. When looking at the reflection data as the research period moved from beginning to end, 11 students acknowledged no change or an inconsistent change, three students reported a negative change, and seven students reported a positive change in the meaningfulness of their experience of sketchnoting the text.

Within the sketch reflections there were 33 comments made by 12 different students. Of the 33 comments, 13 specific categories were developed, and then narrowed down to three general themes of: Sketchnoting Helped with Reading, Complications that Arose from Sketchnoting, and Pushback from Sketchnoting.

Table 10

Sketch Reflection Descriptive Statistics

	N	Mean	Std. Deviation
Text 1	20	2.75	1.07
Text 2	19	2.68	1.15
Text 3	22	2.77	1.47
Text 4	17	2.71	1.21
Text 5	14	3.21	1.31
Text 6	20	2.80	1.28
Text 7	16	2.69	1.30
Text 8	13	2.31	1.31

Table 11 provides a breakdown of how many comments were made for each of the theme categories within the Sketch Reflection Comments.

I also analyzed the overall tone of the responses of the reflections. The overall tone of the Student Sketch Reflections was negative toward sketchnoting. Of the 33 comments that made, 11 had a negative connotation, six had a positive connotation, and three had a mix of both positive and negative influences of sketchnoting while reading. The remaining comments were neutral. The students were torn about the ability of sketchnoting helping them to understand the text. Within the Likert scale ranging from 1-5, the student average was 2.76, indicating that students perceived that competing the sketchnotes as a reading strategy did not help them to better understand the text.

Table 11

Student Sketch Reflection Comments

	Helped	Pushback	Complications
Text 1	4	1	0
Text 2	2	1	3
Text 3	0	3	0
Text 4	1	4	1
Text 5	2	1	0
Text 6	0	2	0
Text 7	0	0	0
Text 8	0	1	0

Sketchnote Assessment and Student Documents

Throughout the course of the study, I asked each of the participants to read and sketchnote each of the eight required texts for the semester over the course of the

intervention period. Figure 7 is an example of a sketchnote from the first text that the students read and sketchnoted after explicit instruction of sketchnoting as a reading strategy. The sample is based Jack London's short story *To Build a Fire.* See Appendix F for additional student sketchnote examples. I assessed each participant's sketchnote on a 3-point scale for both the key ideas, as well as the details, for a total of 6 points per text/sketch on the assessment. As previously stated, Figure 6 illustrates the quality scores of the student sketchnotes of the texts that were read during the intervention period on the same graph as the student sketchnote reflections.

Figure 7

Student Sample of Sketchnote for the Text: "To Build a Fire"

Case Study Participants

In addition to collecting data from the entire class, I conducted a case study to closely analyze the impact of sketching on one student from each of the four ACT Aspire

Readiness categories: Needs Support, Close, Ready, and Exceeding. The student case study group consisted of one male and three female participants. Each of the participants were students in the same section of English 11. The participants within the case study group completed the Pre- and Post-Qualitative Reading Inventory (QRI) to assess their reading comprehension. The students also participated in an interview and their individual sketchnotes were collected and analyzed as documents for sketch completion, change, and growth. See Table 12 for a summary for each of the case study participants.

Student Interviews

I conducted four targeted semi-structured interviews with the case study participants at the end of the intervention period to gain a deeper insight into their reading and perceptions about reading and sketchnoting while reading. There were nine interview questions. The Student Interview Guide can be found in Appendix G. The interviews averaged 5 minutes 31 seconds, with the shortest interview lasting just over three minutes and the longest interview lasting a little over eight minutes. Including the research questions, each interview averaged 538 words.

I categorized each of the nine questions by the constructs of reading motivation, self-efficacy for reading, reading strategy usage, and reading comprehension. Table 13 provides a breakdown of each of the case study participants responses to the interview questions.

I identified seventeen codes from the interview responses, with several of them spanning across the four constructs of reading motivation, self-efficacy for reading, reading strategy usage, and reading comprehension. The codes can be found in Appendix

Table 12

Case Study Participant Summary Information

	Mikayla	Taylor	Ashley	Parker
# of Days Absent during Intervention Period	5	2	5	7
10th Grade ACT Aspire Assessment (Reading)	Needs Support	Close	Ready	Exceeding
Pre-intervention Reading Level (QRI)	8th grade	10th grade	Mid-11th grade	high 10th grade to low 11th grade
Post-intervention Reading Level (QRI)	Mid-11th grade	Mid-11th grade	Mid-high 11th grade	high 10th grade to low 11th grade
Student Perception of Reading Ability	Pretty good reader	Pretty good reader	Used to read a lot, but get busy now; however, still thinks that reading is important	Thinks he can read most texts without difficultly and sometimes reads news articles for fun.
Student Knows Correctly Understanding Text When…	Things connect in their brain and a web of what happened is created when everything makes sense	She remembers the details of the text	She gets a picture of a movie in her head and the pictures seem right and nothing stands out that is weird.	He couldn't pinpoint how he knew he was correctly understanding text when he read and said that it just sort of comes to him.

H. Within the interviews, three of the four participants self-identified as being a good reader and the same acknowledged having a lack of interest in the text that was read in

class and admitted to a lack of effort in the completion of the sketchnotes. Each of the four participants stated that they preferred words as a way to take notes over sketchnoting and they reported a negative experience with sketchnoting while reading during class by stating things such as "I am not a fan" and "I just wanted to get it done." Two of the participants stated that sketchnoting did not help them and two stated that sketchnoting did help them to become a better reader. Three of the four participants acknowledged that they understood the text better when using sketchnoting at least some of the time. All but one of the participants could come up with an additional time that they could see themselves using sketchnoting, like in another class.

Results

Results for Student Reading Motivation and Self-Efficacy (RQ1)

The first research question (RQ1) guiding this study was designed to determine how the implementation of sketchnoting in an English classroom affects students' motivation and self-efficacy for reading course material. I measured student motivation and self-efficacy through the Reading Pre-/Post-Survey, Sketch Assessments, Sketch Reflections, and Interviews.

Quantitative results for reading motivation and self-efficacy. I used quantitative data to determine student thoughts and ideas on how sketchnoting affected their motivation for reading course material through various instruments including the Reading Survey (25 closed-ended questions), Reading Skills Assessment, and Sketchnote Assessment.

Table 13

Case Study Participant Interview Summary

	Mikayla	Taylor	Ashley	Parker
Perception of Experience in English 11	Interested in reading the class material; Liked being able to draw and make notes	Wasn't very interested in the text but not bored by the stories	Felt that the text was dry and not exciting. *The Crucible* was interesting, but it dragged on	Most of the texts boring but easy to understand; Sketchnoting didn't help but reminded him of what read
Perceptions About Sketchnoting	Didn't like sketchnoting at times-the pacing was too fast when reading text aloud	Struggled to find the main themes; Liked not having to note details	Would rather write notes than draw pictures; Didn't always understand own drawings; Found it easier to write words	Didn't feel like he knew what to draw when sketchnoting so ended up writing words
Perception of Effort Put into Sketchnoting	Was motivated to just get the work done	Tried to make the sketchnotes follow the storyline but if the story didn't make sense put less effort into sketchnote	Not a fan of sketchnoting but tried to make it complete and understand the text	Didn't put much effort into sketchnoting
Perception of the Effect of Sketchnoting on Reading	Would prefer to read and sketch on own time not during class; Sketching helped pay attention and understand the text; Enjoyed sketching-it was different and gave her an outlet to draw; Liked doing the summary	Sketchnoting helped her to be a better reader by serving as a reminder of the details; Liked taking written notes more than sketchnoting	Did not help her to become a better reader because she already creates pictures in her head; Feels that sketchnoting could be valuable to people that are more visual	Felt that sketchnoting is an alternative way to take notes if he didn't want to take regular notes.

I completed a paired t-test of the pre-survey and post-survey given to the students about their reading motivation, self-efficacy, and strategy usage with the null hypothesis being that there is no statistically significant relationship between the pre- and post-survey results. The paired sample t-test resulted in ($t(21)=1.06$), $p=.285$), which is not statistically significant.

I hypothesized that as the practice of using sketchnoting as a reading strategy increased there would be a positive increase in the change score of the entire pre-post reading survey for the participants. With a significance level set at 0.01, results of the Pearson correlation indicated that there was no correlation between the between sketchnoting and survey results ($r=.04$, $p=.84$).

In SPSS, I ran a correlation analysis of the total Sketchnote Assessment Score and the sub-constructs of motivation and self-efficacy within the survey. The significance level was set at 0.01. Results of the Pearson correlation indicated that there was no correlation between the completion of the sketchnotes and survey score changes for the sub-construct of motivation ($r=-.02$, $p=.903$) or for the sub-construct of self-efficacy ($r=.11$, $p=.604$).

I ran a correlation analysis of the Sketchnote Reflection Scores to determine if a correlation existed between the perceived value of using sketchnoting and a change in the Student Reading Survey Scores in SPSS. Results of the Pearson correlation indicated that there was no correlation between the student perceived value of using sketchnoting and change in the Student Reading Survey scores, ($r=.26$, $p=.227$). I also ran a correlation analysis of the average score for the Sketch Reflection and the sub-constructs

of motivation and self-efficacy within the survey. With the significance level set at 0.05, results of the Pearson correlation indicated that there was a significant correlation between students who felt that sketchnoting was meaningful to their understanding of the text and the motivation to read for the sub-construct of motivation ($r=0.49$, $p= 0.021$). There was also a significant correlation ($r=0.52$), $p=0.012$) between whether students felt that sketchnoting was meaningful to their understanding of the text and their self-efficacy for reading for the sub-construct of self-efficacy. As student motivation increased, so did student self-efficacy for reading course material. Lastly, results of the Pearson correlation indicated there was also a significant correlation ($r=0.73$, $p<0.001$) between the sub-construct of motivation and the sub-construct of self-efficacy.

The following results are not statistically significant, likely due to the small sample size and short duration of the intervention period; however, the slight changes in the mean scores could have potential importance and indicate a possible trend. On the Student Reading Survey each of the questions were answered on the Likert scale of 1-5. Overall, the students reported enjoyment of the English 11 class between the beginning of the intervention and the end of the intervention increased, with the mean scores going from 4.05 to 4.18. Statistically, the paired sample t-tests resulted in $t(21)=0.56$, $p=0.576$. The students reported feeling as though they were a good reader also increased with the mean scores pre to post changing from 3.86 to 4.09. Statistically the paired sample t-tests resulted in $t(21)=1.04$, $p=3.08$. The mean scores stayed identical for students reporting that they understand what they read at 3.86. Statistically the paired sample t-tests resulted in $t(21)=0.00$, $p=1.00$. The mean score dropped from 4.32 to 3.91 for the effort

that students reportedly put into their English class last year and this current class. Statistically the paired sample t-tests resulted in $t(21)=1.90$, $p=0.071$. Similarly, the mean score dropped from 4.50 to 4.32 for students reporting to believe that it is important to be a good reader and, statistically, the paired sample t-tests resulted in $t(21)=1.00$, $p=0.329$.

Qualitative results for student reading motivation and self-efficacy.

Qualitative data were used to determine student thoughts and ideas on how sketchnoting affected their motivation for reading course material. Students provided reflective feedback in the Sketchnote Reflection Survey, in the Student Reading Survey (eight open-ended prompts), and through case study participant interviews and document analysis. Open coding was used to develop initial general codes and then I moved to more focused codes and general themes.

Through the process of analyzing the data, I developed several themes about student reading motivation from the survey and interview codes including: 1) Students read to learn and grow, 2) students read to maintain or increase their grades and scores, 3) students read because it is a healthy and enjoyable activity, 4) students read when they find it interesting, and 5) students don't like to read or don't read. These five motivation themes led to the assertion that students read when they have something to gain from it. Several students acknowledged a lack of interest in reading material with three of the four students in the case study stating that the text was "dry, nothing exciting" and that they "find most of them boring." Morgan acknowledged that, "some texts are not interesting to me so I can get bored easily." Parker stated that he "found most of them [the reading

material in English 11] kind of boring," and he "didn't put a lot of effort into the completion of the sketchnotes." Some students had combined themes in their responses. For example, Rory responded that he read because "it will help me achieve a higher score on the ACT and it is relaxing."

I also developed several themes about student self-efficacy for reading from the survey and interview codes. These themes included: 1) Students read when they feel like a good reader, 2) students read when they find enjoyment in it or have an interest in the text, 3) students read when they feel they will understand it, and 4) students avoid reading when they feel as though they may not understand it. These themes led to the assertion that students read when they feel they will be successful at it. During the interview, Mikayla stated, "Well I remember the last couple of years of high school I never like paid attention to the text we were reading because I wasn't interested but I remember when we were reading *The Crucible* I was like wait I get this I actually know what's going on." When asked about the value in learning to sketchnote, Ashley believed that "some people are more visual so if they are already seeing pictures they better understand it so like half the class could be that way and then half couldn't so it makes it kinda difficult for everyone to get it." Similarly, when asked the same question about the value of sketchnoting, Mikayla thought that "I guess it just like it helps the kids that aren't as good as note takers and to be able to jot down a picture and keep going and then jot down another picture."

An assertion was developed through the analysis of the Reading Surveys, Interviews, and Sketch Reflections: Students like doing strategies that are easy and

familiar to them, even if other strategies may be beneficial. During an interview, when Taylor was asked about the potential to continue to use sketchnoting in other classes, she responded, "not really, I like taking written notes more than I do sketchnoting," even after acknowledging earlier in the interview that sketching the text "helped me to remember easier instead of reading it and having to just take it out of the book because I struggle to remember details." Each of the students in the case study reported that they preferred to write words, but three of the four students acknowledged that they appreciated the ability to have options with strategies. This assertion was validated in the Sketchnote Reflections that were completed after each class text and sketchnote when the students were provided the opportunity to share any additional comments.

Within the commentary, 10 of the 12 students acknowledged that the use of sketchnoting affected their motivation and self-efficacy for reading in both positive and negative ways. Rory commented, "I was not very interested in the story and probably would not have remembered it without the sketchnote." While Mike commented, "I think sketch noting helped me to say focused on the text and not what was going on around me." Three of the twelve students explicitly stated that they did not like doing sketchnoting; however, Mitch acknowledged, "It helped somewhat but I just do not like doing it." Table 14 illustrates how two students who completed multiple Sketch Reflections responded about sketchnoting texts throughout the research period. One student openly shared in a sketchnote reflection that by the end of the research period they had reverted back to using other strategies instead of the sketchnote strategy, even

when at the beginning they could identify specific benefits to completing the sketchnotes while reading.

Results for Reading Comprehension (RQ2)

The second research question guiding this study was developed to determine how and to what extent the implementation of sketchnoting affects students' reading comprehension performance in English 11? I measured student reading comprehension through the Pre-/Post- Reading Assessments, the Qualitative Reading Inventory (QRI), Sketchnote Assessments, Sketch Reflections, document analysis, and Interviews.

Quantitative results for reading comprehension. I used quantitative data to determine how sketchnoting affected student reading comprehension of course material through various instruments including the Reading Skills Assessment, QRI, and Sketchnote Assessment.

I completed a paired t test of the Pre-Reading Skills Assessment and Post-Reading Skills Assessment given to the students with the null hypothesis being that there is no statistically significant relationship between the pre- and post-reading skills results. Results of the dependent (paired) sample t-tests indicated that there were significant differences between the student skills on the pretest and posttest, $t(21) = 7.18$, $p < .001$. This led me to reject the null hypothesis that there is no relationship between the pre- and post- student survey results.

I completed a correlation analysis of the Sketchnote Assessment and change score of the Reading Skills Pre-Assessment and Reading Skills Post-Assessment. With the significance level set at 0.01, results of the Pearson correlation indicated that there was no

correlation (r=-.03), p=.871) between the Sketchnote Assessment scores and the change score of the Reading Skills Pre-Assessment and Pre-Reading Skills Post-Assessment.

Table 14

Sketchnote Reflections Throughout the Research Period

	Mary	Mike
To Build a Fire	"I feel like if we hadn't done any sketch-notes I would've understood the story fine, though I recall the details better than if we hadn't done notes."	"I think sketchnoting helped me to stay focused on the text and not what was going on around me."
Crucible Act I	"I feel like sketchnotes are too much of a distraction from the play to be effective. The play has to continue at an active pace since we're reading outloud in real time, so we don't have time to stop and draw. I only properly understood many details and parts of the story after rereading the text outside of class, where sketchnotes and reading outloud were not a factor."	"I think it was kinda helpful but sometimes it was hard to think of what to sketch."
The Crucible Act II	"The sketchnotes were less intrusive since I focused more on plain text for notes, though I'm unsure if drawing pictures helped out much."	
The Crucible Act III		"I found a way that works really well for me. It is a lot more words but it works.
The Crucible Act IV		It will help me to look at them and remember. I also have my like own mix of words versus pictures."
Perils of Indifference	"I feel that the highlighting did a lot to help me understand the text. The sketchnotes felt unnecessary."	

The Qualitative Reading Inventory (QRI) enabled me to gain insight into the case study participant's reading levels. The student reading levels were determined based upon the number of reader miscues and the number of questions answered correctly when read orally and the number of questions answered correctly when read silently. The student 10th grade ACT Aspire scores were used to gauge where to start the assessment. Each of the students in the case study was given a high school level expository passage to read.

The story Parker read had three parts, but by the second part he had reached a frustration level. He struggled with both explicit and implicit questions, even with lookbacks. According to the initial assessment criteria he was reading at a high 10th grade-low 11th grade level. He scored within the same reading range on the post-intervention QRI assessment.

According to the initial assessment criteria Ashley was reading at a mid-11th grade level, and she showed growth in the post-intervention assessment, scoring at a mid-high-11th grade level. Overall, post-intervention, she was able to improve her reading level score.

According to the initial assessment criteria she was reading at a 10th grade reading level. Taylor had a few limiting factors that affected her score, specifically, she appeared nervous and she focused a great deal on the pronunciation of the words. Taylor improved immensely on the post-intervention QRI assessment, with the results indicating that she was reading at a mid-11th grade level; however, this could be attributed to her increased background knowledge of the topic on the post-assessment (Leslie & Caldwell,

2017). I believe she was potentially using their prior knowledge to answer the comprehension questions because she were able to answer some of the comprehension questions and struggled with answering other questions that were directly in the text, even when she could use look backs.

According to the initial assessment criteria Mikayla was reading at an 8th grade reading level. She had some limiting factors in that the vocabulary was difficult for her and it affected her fluency. Mikayla kept losing her place and she did not pause at the conclusion of sentences. She was familiar with the topic. Mikayla improved a great deal on the post-intervention QRI assessment, with the results indicating that she was reading at a mid-11th grade level; however, similar to Taylor, this could be attributed to the fact that she was more familiar with the topic.

Qualitative results for reading comprehension. I used qualitative data to determine student thoughts and ideas on how sketchnoting affected their ability comprehend course material. The students provided reflective feedback in the Sketch Reflections, through case study participant interviews, and document analysis. I used open coding to develop initial general codes and then I moved on to more focused codes and general themes by breaking the student responses into categories and then themes.

Some themes emerged from the analysis of the comprehension codes that were developed from the Sketch Reflections and Interviews. The themes I identified were: 1) Sketchnoting helps with reading and 2) Sketchnoting does not help with reading. Eight of the twelve students who provided additional comments in the Sketchnote Reflection acknowledged a potential effect that sketchnoting had on their reading ability. While

four of the students responded vaguely that "sketchnoting helped," five students specifically stated that sketchnoting helped them with comprehension strategies such as remembering the text, keeping the story plot in order, and making connections with the text. Krista stated, "I feel like sketch noting really helped me connect to illusory and auditory parts of my brain and helped me remember the story more." Similarly, Chris stated, "Lately I haven't been trying in school, but during reading act 4 of the Crucible I started to care and I truly think that the sketch note has helped me remember scene that happened during Act 4." While none of the comments were categorized as sketchnoting having a negative impact on reading ability, students commented that sketchnoting in some cases had no perceived effect on their reading, while at other times it had a positive perceived effect on their reading ability. Mary stated, "I feel like if we hadn't done any sketch-notes I would've understood the story fine, though I recall the details better than if we hadn't done notes."

The interview data from the students in the case study presented similar findings. During the interview with Taylor, who claims to be a pretty good reader and wasn't the most interested in the text we read in class but wouldn't say she was bored by the stories we were reading, stated that she knew that she is correctly understanding the text when she "remembers the details, the details of the storylines." She then continued later in the interview to acknowledge that using sketchnoting has helped her to be a better reader because, "I can remember certain details about the book like a date or time or what happened in the scene and other things." Then, Taylor reiterated the idea when asked if she felt she understood what she read better when using sketchoting, "because like I said

before, it would help me remember easier instead of reading it and having to just take it out of the book because I struggle to remember details." When I asked her if she sometimes gets caught up in the creation of the pictures when reading and sketchnoting she replied, "I was able to balance it pretty well." Figure 8 is an example of a student's sketchnote of Aurthur Miller's *The Crucible*.

Impacts of Adding Sketchnoting into the English 11 Classroom Results (RQ3)

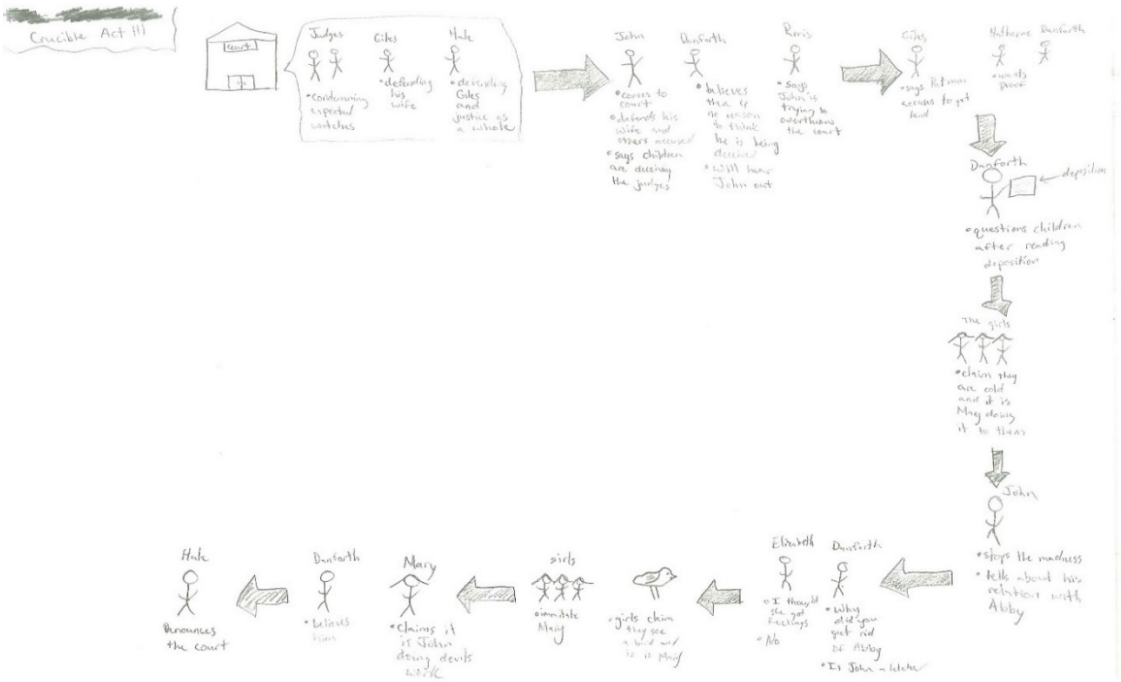
The third research question guiding this study was developed to determine the impacts of adding sketchnoting into the English 11 classroom. I measured impact through Reading Pre-/Post-Survey, Sketch Assessments, Skills Assessment, QRI Assessment, Sketch Reflections, document analysis and Interviews.

Quantitative results for impacts of adding sketchnoting into the English 11 Classroom. I used quantitative data to determine the impacts of adding sketchnoting as a reading strategy to the English 11 class through various instruments including the Reading Survey (twenty-five closed-ended questions), Reading Skills Assessment, QRI, and Sketchnote Assessment, and Sketch Reflection.

I completed a correlation analysis of the Sketchnote Assessment and student demographics including gender and ethnicity, along with student readiness levels on the 10th grade ACT Aspire assessment and number of days absent from class. With the significance level set at 0.01, results of the Pearson correlation indicated that there was no correlation between the student scores on the Sketchnote Assessment and any of the components of student demographics or test scores.

Figure 8

Student Sample Sketchnote of Aurthur Miller's "The Crucible"



I also completed a correlation analysis of the Student 10th grade ACT Aspire assessment and their interest in completing the sketchnotes while reading as identified by the student Sketch Reflections and Student Interviews. The significance level was set at 0.01. Results of the Pearson correlation indicated that there was no correlation among any of the variables.

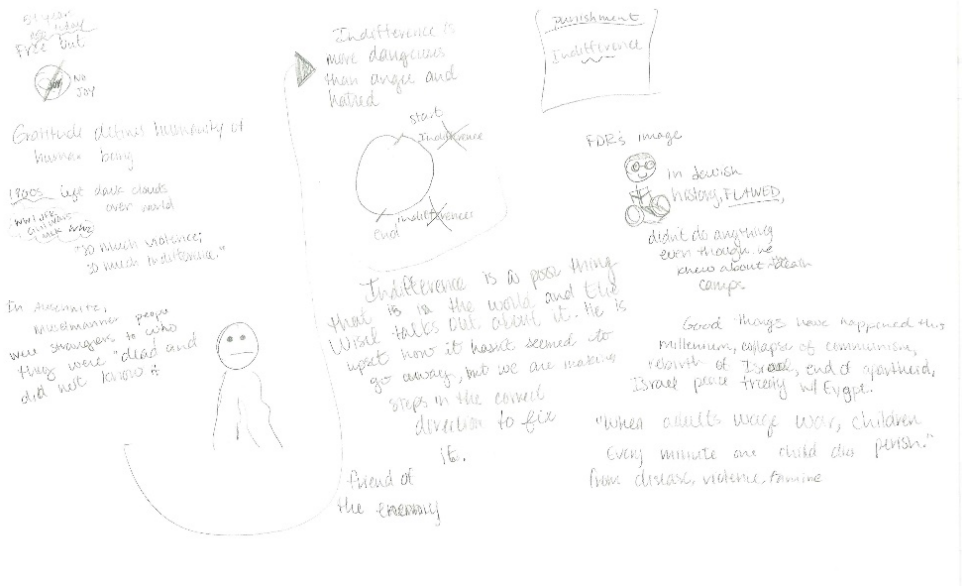
Qualitative results for impacts of adding sketchnoting into the English 11 Classroom. I used qualitative data to determine what, if any, impact would occur when using sketchnoting in the English 11 classroom. Students provided reflective feedback in the Reading Pre-Post Survey (9 open-ended questions), the Sketch Reflections, through case study participant interviews, and document analysis. I used open coding to develop initial general codes and then I moved on to more focused codes and general themes.

My analysis of the Case Study and Sketch Reflection data led to the development of the assertion that sketchnoting, as a reading strategy, benefits students in various ways especially when effort is put into completing the sketchnotes with the reading. Within the case study, two of the four participants acknowledged not putting much effort into the sketchnotes and, yet, still got some value from the completion of the sketchnote while reading. During the interview, Mikayla stated that "it [sketchnoting] helped me to pay attention more and it helped me to understand the text we read better I guess." She also stated that sketchnoting helped her better understand when she read. Yet, she stated, regarding the amount of effort put into the completion of the sketchnotes, "I know for some of them I was like I need to do this ugh I just want to get it done with. But then for the last one with the *Perils* I wrote everything down and said I need this and this and went back to the text and was like I need to get this." Figure 9 is a student sample sketchnote of Eli Wiesel's *Perils of Indifference.* Additional samples of student sketchnotes can be found in Appendix F, in which it is evident that the students put less effort into the completion of the sketchnotes as they moved from completing them together in class to completing them independently. The Student Sketch Reflection data also supports this assertion. Lisa emphatically stated, "I hate it. But it's actually a good reference for someone who doesn't always pay attention like myself."

The assertion that students like doing strategies that are easy and familiar to them was reiterated through the analysis process of the qualitative data. During the Student Interviews, Parker reported that he felt that sketchnoting did not help him to become a

Figure 9

Student Sample of Eli Wiesel's "Perils of Indifference"



better reader and stated that he "didn't know what to draw so I end up writing words anyway." Parker also stated that he put "not a lot" of effort into the completion of the sketchnotes, and yet he had one of the highest scores for sketch completion. Every one of Parker's sketchnotes were analyzed and found to be completed well, based upon the assessment rubric found in Table 4 by using both words, symbols, and images to note the main ideas and details of the text that was read. Parker's sketchnotes can be found in Appendix F. Similarly, in the Student Sketch Reflections, Krista stated that she "prefers annotating on the text…I learn better that way." She then followed up by stating in a later sketch reflection comment that she "feels sketchnoting really helped connect to illusory and auditory parts of my brain and helped me remember the story more." Ashley reiterated her sentiment that sketchnoting was not easier and did not help her with her reading when she stated in the Student Sketch Reflection that "writing notes is easier for

me to understand than writing." In her interview she also stated that "I would rather write down and take the notes, drawing pictures is just too much," and "I was not a fan" when referring to sketchnoting. Ashley's sketchnotes can be found in Appendix F, in which she does start off with balanced sketchnotes using both symbols, pictures, and words and then reverts to primarily words with only a few images to depict the main ideas of the text.

Several of the students voiced concern in both the Sketch Reflections and the interviews that doing the sketchnoting while reading distracted them from the reading itself. Mary stated, "I feel that the sketchnotes are too much of a distraction from the play to be effective. The play has to continue at an active pace since we're reading out loud in real time, so we don't have the time to stop and draw. I only properly understood many details and parts of the story after rereading the text outside of class, where sketchnotes and reading out loud were not a factor." This idea was reiterated by Tucker when he stated, "The sketch note helped, but it was also distracting me from the story itself."

CHAPTER 5

DISCUSSION

The purpose of this study was to determine if a specific reading strategy, that encompassed different components of learning (summarization, visualization, connections), such as sketchnoting, could increase the reading motivation, self-efficacy for reading, and reading comprehension of 11th grade students. This chapter is a discussion of the findings of the research.

Conclusions for Student Reading Motivation and Self-Efficacy (RQ1)

The first research question was established to determine the impact of using sketchnoting as a reading strategy on reading motivation and reading self-efficacy. Students engage in academic tasks for various reasons and student motivation can be peaked through differing methods. While motivation can be fostered by teachers, it is inherently created by the students themselves (Kennedy, 2009/2010 and Reeve 2012). Teachers must find a way to peak and sustain their interest in order to keep students motivated to read. In this study, the student data from the reading survey and interviews indicated that some students were motivated to complete their sketchnotes because they wanted to learn how to read better, some were motivated by the texts that were read, and some were motivated by grades and scores. For example, I concluded that Ashley was motivated to do the reading and sketchnoting for grade attainment when, in the interview, Ashley stated that she was not a fan of sketchnoting, but that she would try to do as much as she could to make it complete and get an understanding of the text. She didn't really want to complete the task but recognized that she did have something to gain from it.

Mikayla stated in her interview that she was interested in reading the material for class and liked the combination of drawing and making little notes when sketchnoting, indicating her motivation was interest in the reading of the text and the activity. This variance in reading motivation supports the conclusions by Deci & Ryan (1994) that even if students are motivated to do a task like reading for extrinsic reasons, these reasons could be internalized because they are found to be effective in the world.

While there were no statistical changes in the pre- and post-reading survey results regarding student motivation, nor a statistical correlation between student perceived value of sketchnoting and change in their pre- post reading survey scores, there was qualitative data to suggest that sketchnoting impacted reading motivation in differing ways. The interviews and Student Sketch Reflection data show that sketchnoting, as a reading strategy, both increased and decreased the motivation to read in students. The Student Sketch Reflection data indicated that there was an overall negative attitude toward sketchnoting. There were 12 students who provided reflection comments and of those 12, nine of them had a negative connotation such as, "I do not think they are helpful to do at all." However, of the 12 students who provided reflection comments, six reported positive feelings toward the use of sketchnoting helping them with their reading. For example, Rory stated, "I think the sketchnoting helped me to stay focused on the text and not what was going on around me."

The reasons students chose to do or not to do the reading and sketchnoting determined their level of engagement in the task. When the process of sketchnoting was being taught and directed by me with the whole class, the student mean scores on their

assessments were higher and the number of students completing the sketch reflections were higher, indicating an increase in engagement of sketchnoting. However, through the gradual release of responsibility, as the students moved toward more independent learning and use of the strategy, the sketch assessment mean scores lowered and the number of students completing the sketch reflections decreased. See Figure 6. Scaffolding is an integral part of the teaching of specific reading strategies (Appleman, 2010; Block & Duffy, 2008; Boling & Evans, 2008; Duke & Pearson, 2002; Duke, et al., 2011; Edmonds, et al., 2009; Pressley 2016, and Salem, 2016) and while the process of sketchnoting while reading was scaffolded during this research period, more time and scaffolding was needed to ensure that the students were able to independently complete the task following the gradual release of responsibility framework. As noted in Figure 6, as the year progressed the students became better at doing the sketchnotes and were moving toward independent use of the strategy; however, by the end of the research period, they hadn't reached complete independence. With more time to learn and master the strategy with appropriate scaffolding, it could become more effective as a strategy for the students.

Student self-efficacy for reading can be increased by helping the students feel like and see that they can be a good reader, helping them find enjoyment or interest in the task, and helping them understand the text (Bandura 1993, Deci & Ryan, 1994; Kennedy 2009/2010; McCabe & Margolis, 2001; Pink, 2009; Ryan & Deci, 2000; Schallert & Martin, 2003). There was a significant correlation between students who felt that sketchnoting was meaningful to their understanding of the text and both the motivation to

read sub-construct and the self-efficacy sub-construct. There was a significant correlation between the students who found success in the use of the sketchnotes as noted in the Student Reading Survey Results and an increase in their motivation and self-efficacy for reading. While it was not statistically significant, there was an increase in the mean scores for feeling as though they were a good reader reported on the student pre-post-reading survey from a 3.86 to a 4.09, although the dependent (paired) sample t-test indicated that there was no significant difference $t(21)=1.045$, $p=0.31$. Given the small sample size and short duration of the intervention period, this slight change in the mean score could indicate a possible trend upward in students' feeling as though they become better readers.

By the fifth text of the intervention students were given the opportunity to choose to work either independently or collaboratively on reading and sketchnoting the text. There was no statistically significant correlation between the students working collaboratively and an increase in their completion of the sketchnotes, an increase in their sketch reflection scores, or changes in their motivation or self-efficacy as measured by the reading pre- and post-survey results. While Badura (1971) argues that student self-efficacy can be influenced by the vicarious experiences of others, this was not evident in this study.

In summary, sketchnoting did not have a statistically significant influence on student motivation and self-efficacy for reading. However, when students perceive that sketchnoting was meaningful to their understanding of the text statistically significant correlations were found. As student perception of sketchnoting being meaningful to their

reading increased there was also an increase in both their motivation and self-efficacy for reading. These results, along with the results from the student survey and interview results demonstrate that when students find value in sketchnoting they will use it as a strategy and their reading motivation and self-efficacy increases.

Conclusions for Student Reading Comprehension (RQ2)

The second research question was established to determine the impact of adding sketchnoting as a reading strategy on student reading comprehension. There are many facets to reading comprehension and researchers often grapple over how comprehension occurs and how best to help students who struggle with reading comprehension. Regardless, when students comprehend what they read, they are able to make meaning out of text (Duke & Carlisle, 2011, Salem, 2017, Snow, 2002). Sketchnoting, as a reading strategy provided students with a platform to strategically work through the comprehension process.

Students benefit from sketchnoting as a reading strategy in various ways. While there was no statistical data to definitively support the conclusion that sketchnoting affected student reading comprehension per se, the paired t test of the Pre-Reading Skills Assessment and Post-Reading Skills Assessment demonstrated that there was a statistical difference between students' scores pre- to post- with regards to reading skills. Similarly, three of the four students in the case study group increased their reading QRI scores. However, because there are many variables in the classroom, and this study did not allow for a control group, it cannot be determined that the sole cause of the change was from sketchnoting. The data indicated that there is no correlation between the completion of

sketchnoting and student Reading Skills Assessment scores; however, the data gathered from the students themselves through the Student Sketch Reflections and the interviews indicated that the act of sketchnoting has an impact on reading comprehension.

Cantrell et al. (2010) argue that struggling readers need instruction focused on models to allow them to integrate their schema into their reading. Within the Student Sketch Reflections and the Student Interviews, students reported that they focused better on the text they read when doing the sketchnoting because sketchnoting forced the student to stay on task and pay attention to the main ideas of the text to complete the task. Similarly, students reported that they remembered the details of the text they read better when using sketchnoting. The students also reported that sketchnoting helped them make connections to the text they read. Each of these three concepts, reported by the students, have been shown to help with student reading comprehension (Bock & Duffy, 2008; Duke & Pearson, 2002; Harmon, et al., 2016; Pillars, 2016; Snow, 2002). Sketchnoting, as a reading strategy, provided a platform for the students to work through their reading to build their schema and their reading comprehension.

The use of sketchnoting as a reading strategy, allowed the students to work collaboratively through the reading and the creation of the sketchnotes. Several studies have shown that collaborative learning increases literacy achievement (Guthrie, et al., 2000, Kennedy, 2009/2010; Salem, 2017). However, in this study, there was no correlation between student collaborative learning and an increase in reading comprehension. Interestingly, none of the students mentioned collaborative work in the Student Sketch Reflections, and during the interview, only one student acknowledged

that they felt more confident when we did them in class and I went over the pieces of the text that they missed or didn't understand.

In summary, sketchnoting as a reading strategy did not have a statistically significant influence on student reading comprehension. There was no correlation linking the use of sketchnoting as a reading strategy and a change in student reading comprehension; however, there was a statistically significant change in the students' reading skills and three of the four students in the case study increased their QRI levels by the end of the intervention period.

Conclusions for Impacts of Adding Sketchnoting into the English 11 Classroom (RQ3)

The third research question was established to determine the impact of adding sketchnoting as a reading strategy to the English 11 classroom. There are many variables that affect student learning, often demographic or academic variables are the easiest to narrow down. There was no correlation between the completion of sketchnotes and any of the demographic and academic variables. This led to the conclusion that sketchnoting is a tool that can be utilized by all students when reading text.

The Pre- and Post-Student Reading Survey results indicated that when students struggle with their reading they utilize various tools and techniques to figure it out. Sketchnoting, as a reading strategy, is a multi-faced tool that can reach several types of learners. However, as the Student Sketch Reflection and Student Interview responses indicated, older adolescent students, who are already using specific reading strategies or notetaking strategies, prefer to stick with the strategies they have found to work for them.

They have little motivation to learn and master a new strategy. Three of the four case study participants acknowledged a lack of effort in completing the sketchnotes while they were reading, even though they could see some benefit in them. Along these same lines, Lisa, stated, "I hate it [sketchnoting]. But it's actually a good reference for someone who doesn't always pay attention like myself." In their meta-analysis of interventions for struggling readers, Scammaca, et al. (2007) found that overall, interventions have little effect on high school students, but some improvement can be made at the individual level when targeted with appropriate interventions. The problem that remains is that, as evident in the results of this study, older adolescent students will not easily buy-in to new strategies, even when they know that the strategy has a positive effect on their performance.

Within the English 11 classroom, students who did not like sketchnoting preferred note taking, they felt sketchnoting while reading aloud was a distraction to the reading and they felt that it was hard to think about what to sketch. Ashley stated multiple times in both the Student Sketch Reflections and the Student Interview that sketchnoting was not easier for her and she preferred to take notes, and by the end of the research period she had reverted back to what she was most comfortable with, words. By the end of the research period, the majority of the sketchnotes Ashley completed were words and not images. While sketchnoting is a reading strategy that fosters identification of key ideas and details, building connections, and summarizing the text during and after reading, there are other strategies that students can do to achieve this same purpose. Block and Duffy (2008) affirm that students need to have several effective strategies to choose from

and they must be instructed on the strategic use of the strategy, but students should not be confined to one single strategy.

The final impact of using sketchnoting in the English 11 classroom is that it provides students with a tool to use collaboratively when they struggle with reading. In the Pre-Reading Survey, two students reported that when they struggle with their reading they do nothing or shut down, but incorporation of the collaborative use of the strategy changed this. By the conclusion of the research period, each of the students reported that instead of shutting down, they utilized a strategy such as asking for help. This could be attributed to the creation of a learning environment that fostered safe collaboration (Cantrell et al., 2010; Kamil, 2008; Slavin et al., 2008; Watson et al., 2012).

Limitations

The two most impactful limitations of this study were the small research population size and the short time frame to incorporate the intervention into the classroom. The small sample size was not large enough to make any generalized conclusions about the findings to the larger population. Large sample sizes are necessary in correlational studies to determine effective conclusions because the goal is to determine patterns of relationships between variables (Smith and Glass, 1987). Through the use of the Gradual Release of Responsibility Framework, students were introduced to the strategy and I modeled it for them for about half of the first text. The second half of the first text I had the students complete the reading and sketchnote on their own. The following three texts and sketchnotes were done using focused instruction. By the end of the research period, the students were still working to master the strategy. Baker,

DeWyngaert, and Zeliger-Kandasamy (2015) conclude that strategy instruction is more beneficial at the secondary level than the primary level and that classroom-based interventions are more effective when they are done for an extended period of time.

An additional limitation is the amount of time dedicated to teaching students how to effectively collaborate for learning during the research period. While students are expected to work collaboratively in school, I did not take the time to explicitly teach them how to effectively collaborate during reading and for strategy completion. During the research period, the students were given the opportunity to work alone or collaboratively with a partner or a group. An overwhelming majority of the students chose to work alone. When structured effectively, collaboration can increase student motivation for reading and reading comprehension.

A final limitation was a lack of authentic learning for the students in English 11. Block and Duffy (2008) insist that "instruction in comprehension strategies is most effective when students are given authentic reasons for reading in the first place—that is, when they can see that the comprehension strategies they are learning serve a purpose that is important to them, or make it possible for them to achieve an important goal." The students in the English 11 class were asked to complete reading tasks that were, in the students' words, "boring" and "dull." The curriculum for the class dictates specific texts to cover throughout the semester. While the texts seemed to be interesting to the instructors, the students did not share the same sentiment.

Implications

Students in the United States are not leaving high school college and career ready

in reading, and consequently, there have been many studies done to determine what can be done to ensure that we are graduating students ready to be successful. Cantrell, et al. (2010) through their research on strategy-based instruction with struggling adolescent readers believed that "adolescents need instruction that focuses on constructing a situation model that enables them to effectively integrate their knowledge, experience, and strategies to achieve deep-level comprehension in a variety of contexts for a range of purposes" (p. 269). As noted in the student interview and sketch reflection responses, sketchnoting, as a reading strategy, provides students with a tool to help them identify the key ideas and details of a text and also take them beyond the key ideas and details of the text by providing them with a platform to continue to make connections to the text. The students explicitly recognized in their responses that sketchnoting helped them to remember the details of the text easier and were able to create sketchnotes that connected their thinking to the text itself.

Similarly, teachers must continue to work to build student motivation and self-efficacy for reading. Several studies have shown that an increase in reading motivation correlates to an increase in reading comprehension (Guthrie, et al., 2013; Guthrie et al., 2000; Malloy, 2015; Thomas, 2014). The results of my study indicate that students are motivated to read when they have something to gain from it. As educators who facilitate the learning of young people, it is part of our job to help students see the value in reading and completing reading strategies while engaging them in the activity. We must determine what motivates our students and feed into their drive to complete the task. The results of the study reiterate the findings of Bandura's (1971) early research that students

do tasks such as reading when they feel they will be successful at it. We must make a conscious effort to scaffold text that may be difficult for students to comprehend successfully and provide effective reading strategies that help students work through the text.

Recommendations

Additional research in the areas of motivation for reading, self-efficacy for reading, and reading comprehension are recommended as a result of this study.

One recommendation for additional research in the area of student motivation and self-efficacy is research to determine means to target older adolescents' use of reading strategies. Throughout this research period, the students showed a lack of enthusiasm to complete the reading with the sketchnoting. It would be advantageous to determine which strategies students are compelled to use the most and determine ways to encourage them to try (and eventually adopt) new reading strategies.

A second recommendation for additional research is in the arena of reading comprehension. While there has been a great deal of research conducted over the last couple decades on adolescent reading, older adolescent students are still struggling with reading comprehension. Identifying the root cause of this lack of success with reading in older adolescents could be revolutionary in education.

REFERENCES

An, S. (2013). Schema theory in reading. *Theory and Practice in Language Studies*, *3*(1), 130-134. doi:10.4304/tpls.3.1.130-134

Appleman, D. (2010). *Adolescent literacy and the teaching of reading: Lessons for teachers of literature*. Urbana, IL: National Council of Teachers of English.

Au, W. (2007). Vygotsky and Lenin on learning: The parallel structures of individual and social development. *Science & Society 71*(3), 273-298.

Baker, L., DeWyngaert, L. U., & Zeliger-Kandasamy, A. (2015). Metacognition in comprehension instruction. In S. R. Parris and K. Headley (Eds.)., *Comprehension instruction: Research-based best practices* (pp. 72-87). New York, NY: Guilford.

Bandura, A. (1971). *Social learning theory.* New York, NY: General Learning Press.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive Theory.* Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist*, *28*(2), 117-148.

Bandura. A. (2002). Social cognitive theory in cultural context. *Applied Psychology: An International Review*, *51*(2), 269-290.

Beaver Dam Unified School District Strategic Plan. (n.d.). Retrieved June 30, 2017, from http://www.bdusd.org/district/strategicplan.cfm

Beers, S. & Howell, L. (2005). *Reading strategies for the content areas* (vol. 2). Alexandria, VA: ASCD.

Biancarosa, C., & Snow, C.E. (2006). Reading next--A vision for action and research in middle and high school literacy: A report to Carnegie Corporation of New York (2nd ed.). Washington, DC: Alliance for Excellent Education.

Block C. C. & Duffy G. G. (2008). Research on teaching comprehension: Where we've been and where we're going. In C.C. Block and S. R. Parris (Ed.), *Comprehension instruction: Research-based best practices* (2nd ed., pp.19-37). New York, NY: Guildford.

Boling C. J., & Evans, W. H. (2008). Reading success in the secondary classroom. *Preventing School Failure, 52*(2), 59-66.

Brinkmann, S., & Kvale, S. (2015). *InterViews: Learning the craft of qualitative research interviewing* (3rd ed.). Thousand Oaks, CA: Sage.

Cantrell, S. C., Almasi, J. F., Carter, J. C., Rintamaa, M., & Madden, A. (2010). The impact of a strategy-based intervention on the comprehension and strategy use of struggling adolescent readers. *Journal of Educational Psychology, 102*(2), 257-280. doi:10.1037/a0018212.

Creswell, J. W. (2015). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (5th ed.). Boston, MA: Pearson.

Crotty, M. (2015). *The foundations of social research: Meaning and perspective in the research process.* London: Sage.

Cuevas, J., & Dawson, B. L. (2018). A test of two alternative cognitive processing models: Learning styles and dual coding. *Theory and Research in Education*, *16*(1), 40–64.

Deci, E. L., & Ryan, R. M., (1994). Promoting self-determined education. *Scandinavian Journal of Educational Research 38*(1), 3-14.

De Naeghel, J, Van Keer, H., Vansteenkiste, M., & Rosseel, Y. (2012). The relation between elementary students' recreational and academic reading motivation, reading frequency, engagement, and comprehension: A self-determination theory perspective. *Journal of Educational Psychology 104*(4), 1006-1021. doi: 10.1037/a0027800

Doolittle, P. E. (1995). *Understanding cooperative learning through Vygotsky's zone of proximal development.* Paper presented at the Lilly National Conference on Excellence in College Teaching, Columbia, SC.

Duckworth, S. (2018). *How to sketchnote: A step-by-step manual for teachers and Students.* Irvine, CA: EdTechTeam Press.

Duke, N.K. & Carlisle, J. (2011). The development of comprehension. In M.L. Kamil, P. D. Pearson, E. B. Moje, P. P. Afflerbach (Eds.), *Handbook of Reading Research* (Vol. IV, pp. 199-228). New York, NY: Routledge.

Duke, N. K. and Pearson, P. D. (2002). Effective practices for developing reading comprehension. In A. E. Farstrup and S. J. Samuels (Eds.), *What research has to say about reading instruction* (3rd ed., pp. 205-242). Newark, DE: International Reading Association.

Duke, N. K., Pearson, P. D., Strachan, S. L., and Billman, A. K. (2011). Essential elements of fostering and teaching reading comprehension. In A. E. Farstrup and S. J. Samuels (Eds.), *What research has to say about reading instruction* (4th ed., pp. 51-93). Newark, DE: International Reading Association.

Edmonds, M. S., Vaughn, S., Wexler, J., Reutebuch, C., Cable, A., Tackett, K. K., & Schnakenberg, J. W. (2009). A synthesis of reading interventions and effects on reading comprehension outcomes for older struggling readers. *Review of Educational Research, 79*(1), 262-300. doi:10.3102/0034654308325998.

Fisher, D. & Frey, N. (2013). *Better learning through structured teacher: A framework for the gradual release of responsibility* (2nd ed.). Alexandria, VA: ASCD.

Fisher, D. & Frey, N. (2015). Best practices for comprehension instruction in the secondary classroom. In S. R. Parris and K. Headley (Eds.)., *Comprehension instruction: Research-based best practices* (pp. 253-265). New York, NY: Guilford.

Guthrie, J. T., & Klauda, S. L. (2014). Effects of classroom practices on reading comprehension, engagement, and motivations for adolescents. *Reading Research Quarterly*, *49*(4), 387-416. doi:10.1002/rrq.81

Guthrie, J. T., Klauda, S. L., & Ho, A. N. (2013). Modeling the relationship among reading instruction, motivation, engagement, and achievement for adolescents. *Reading Research Quarterly*, *48*(1), 9-26. doi: 10.1002/rrq.035

Guthrie, J. T., McRae, A., & Lutz Klauda, S. L. (2007). Contributions of concept-oriented reading instruction to knowledge about interventions for motivations in reading. *Educational Psychologist*, *42*(4), 237-250.

Guthrie, J. T., & Wigfield, A. (2000). Engagement and motivation in reading. In M. L. Kamil, P. B. Mosenthal, P. D. Pearson, & R. Barr (Eds.), *Reading research handbook (Vol. 3*, pp. 403–424). Mahwah, NJ: Erlbaum.

Guthrie, J.T., Wigfield, A., & VonSecker, C. (2000). Effects of integrated instruction on motivation and strategy use in reading. *Journal of Educational Psychology, 92*(2), 331-341, doi:10.1037///0022-0663.92.2.331

Harmon, J., Wood, K., Smith, K., Zakaria, N., Ramadan, K., & Sykes, M. (2016). Teaching and learning in high school reading classes: Perspectives of teachers and students. *Reading Psychology 37*, 962-994. Doi: 10.1080/02702711.2016.1157536

Harvey, S., & Goudvis, A. (2007). *Strategies that work: Teaching comprehension for understanding and engagement* (2nd ed.). Portland, ME: Stenhouse Publishers.

Hattie, J. & Zierer, K. (2018). *10 Mindframes for visible learning: Teaching for success.* New York, NY: Routledge.

Heath, C. & Heath, D. (2010). *Switch: How to change things when change is hard*. New York, NY: Broadway Books.

Hennink, M., Hutter, I., & Bailey, A. (2011). *Qualitative research methods* (pp. 108-134). Los Angeles: Sage.

Ivey, G. (1999). A multicase study in the middle school: Complexities among young adolescent readers. *Reading Research Quarterly (54)2*, 172-192.

Jensen, E. (2005). *Teaching with the brain in mind.* Alexandria, VA: ASCD.

John-Steiner, V., & Mahn, H. (1996). Sociocultural approaches to learning and development: A Vygotskian framework. *Educational Psychologist*, *31*(3/4), 191-206.

Kamil, M. (2003). Adolescents and literacy: Reading for the 21st century: A report to Carnegie Corporation of New York. Washington, DC: Alliance for Excellent Education.

Kamil, M. L., Borman, G.D., Dole, J., Kral, C. C., Salinger, T., and Torgesen, J. (2008). Improving adolescent literacy: Effective classroom and intervention practices: A practice guide (NCEE#2008-4027). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. Retrieved from http://ies.edu/gov/ncee/wwc

Kennedy, E. (2009/2010). Narrowing the achievement gap: Motivation, engagement, and self-efficacy matter. *Journal of Education 190(3),* 1-11.

Kintsch, W. (1998) *Comprehension: A paradigm for cognition.* Cambridge, England: Cambridge University Press.

Koro-Ljungberg, M., Yendol-Hoppey, D., Jude Smith, J., & Hayes, S.B. (2009). (E)pistemological awareness, instantiation of methods, and uninformed methodological ambiguity in qualitative research projects. *Educational Researcher, 38*(9), 687-699.

Lee, C. D. (2004). Literacy in the academic disciplines and the needs of adolescent struggling readers. *Voices in Urban Education, 3,* 14-25.

Leslie, L. & Caldwell, J. (2017). *Qualitative reading inventory-6*. United States of America: Pearson.

Malloy, J. A. (2015). New insights on motivation in the literacy classroom. In S. R. Parris and K. Headley (Eds.)., *Comprehension instruction: Research-based best practices* (pp. 147-161). New York, NY: Guilford.

McCabe, P. P. & Margolis, H. (2001). Enhancing the self-efficacy of struggling readers. *The Clearing House, 75(1),* 45-49.

McGregor, T. (2019). *Ink & ideas: Sketchnotes for engagement, comprehension, and thinking.* Portsmouth, NH: Heinemann.

McTigue, E. & Liew, J. (2011). Principles and practices for building academic self-efficacy in middle grades language arts classrooms. *The Clearing House*, *84*, 114-118. doi: 10.1080/00098655.2010.543191

Mertler, C.A. (2017). *Action research: Improving schools and empowering educators.* Thousand Oaks, CA: Sage.

Morgan, P. L., & Fuchs, D. (2007). Is there a bidirectional relationship between children's reading skills and reading motivation? *Exceptional Children*, *73*, 165-173.

Mucherah, W., & Yoder, A. (2008). Motivation for reading and middle school students' performance on standardized testing in reading. *Reading Psychology*, *29*, 214-235. doi: 10.1080/02702710801982159

NAEP Report Cards - Home. (n.d.). Retrieved September 26, 2017, from https://www.nationsreportcard.gov/

Neugebauer, S. R. (2014). Context-specific motivations to read for adolescent struggling readers: Does the motivation for reading questionnaire tell the full story? *Reading Psychology*, *35*, 160-194. doi: 10.1080/02702711.2012.679171

Paivio, A. (1971). *Imagery and Verbal Processes.* New York: Holt, Rinehart & Winston.

Paivio, A. Intelligence, dual coding theory, and the brain. (2014). *Intelligence 47*, 141-158.

Pajares, F. (1995). Self-efficacy in academic settings. Paper presented at a symposium held during the meeting of the American Educational Research Association, San Francisco, CA.

Pearson, P.D. (2015). Fifty years of reading comprehension theory and practice. In Pearson P.D. & Hiebert, E.H. (Eds)., *Research-based practices for teaching common core literacy* (pp. 1-40). Columbia University: Teachers College Press.

Pearson, P. D., Roehler, L. R., Dole, J. A., & Duffy, G. G. (1990). Developing expertise in reading comprehension: What should be taught and how should it be taught? (Center for the Study of Reading No. 512). Champaign, IL: University of Illinois at Urbana-Champaign.

Pillars, W. (2016). *Visual note-taking for educators*. New York, NY: W. W. Norton and Company.

Pink, D. (2009). *Drive*. New York, NY: Riverhead Books.

Pressley, M. (2016). What should comprehension instruction be the instruction of? In M.L. Kamil, P. B. Mosenthal, P. D. Pearson, and R. Barr (Eds.), *Handbook of Reading Research* (Vol. 3). New York, NY: Routledge.

Reeve, J. "A self-determination theory perspective on student engagement." In *Handbook of Research on Student Engagement, edited by SL Christenson et al.,* pp149-172. Springer Science and Business Media, 2012. doi 10.1007/978-1-4614-2018-7_7

Rohde, M. (2013). *The sketchnote handbook*. United States: Peachpit Press.

Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology*, *25*, 54-67. doi: 10.1006/ceps.1999.1020

Salem, A. A. M. S., (2017). Scaffolding reading comprehension skills. *English Language Teaching 10* (1), 97-111. doi: 10.5539/elt.v10n1p97

Scammacca. N.K., Roberts, G., Vaughn, S., & Stuebing, K.K. (2015). A meta-analysis of interventions for struggling readers in grades 4-12: 1980-2011. Journal of Learning Disabilities, 48, 369-390.

Schallert, D. L., & Martin, D. B. (2003). A psychological analysis of what teachers and students do in the language arts classroom. In J. Flood, D. Lapp, J. R. Squire, & J. M. Jensen (Eds.), *Handbook of research on teaching the English language arts* (2nd ed., pp. 31-45). New York, NY: Macmillan.

Schiller, E., Wi, X., Thayer, S., Blackorby, J., Javitz, H., Williamson, C. (2012). A randomized controlled trial of the impact of the fusion reading intervention on reading achievement and motivation for adolescent struggling readers. SREE Fall 2012 Conference Abstract. United States Department of Education (2018).

Slavin, R. E. (1991). Synthesis of research on cooperative learning. *Educational Leadership*, *8*(5), 71-82.

Slavin, R. E. (1995). *Research on cooperative learning and achievement: What we know, what we need to know.* Center for Research on the Education of Students Placed at Risk. Baltimore, MD: Johns Hopkins University.

Slavin, R. E., Cheung, A., Groff, C., & Lake, C. (2008). Effective reading programs for middle and high schools: A best-evidence synthesis. *Reading Research Quarterly*, *43*(3), 290-322. doi:10.1598/RRQ.43.3.4

Smith & Glass (1987) section on Multiple Regression in Smith, M. L., & Glass, G. V. (1987). Correlational studies. In M. L. Smith and G. V Glass, *Research and Evaluation in Education and the Social Sciences*, 198-224, Needham Heights, MA: Allyn and Bacon.

Snow, C. (2002). *Reading for understanding: Toward an R&D program in reading comprehension.* Santa Monica, CA: RAND.

Thomas, A. F. (2014). An action research study involving motivating middle school students' learning through online literature circles. *Journal of Ethnographic & Qualitative Research*, *9*, 44-54.

Turturean, M. (2013). Current issues of motivation-implications for an education of excellence. *Social and Behavioral Sciences, 92*, 968-972.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. (M. Cole, V. John-Steiner, S. Scribner, & E. Souberman, Eds.). Cambridge, MA: Harvard University Press.

Watson, S. M. R, Gable, R. A., Gear, S. B., & Hughes, K. C. (2012). Evidence-based strategies for improving the reading comprehension of secondary students: Implications for students with learning disabilities. *Learning Disabilities Research*, *27*(2), 79-89.

Wisconsin Department of Public Instruction. (2016). *Beaver Dam High School accountability report card*. Retrieved from https://apps2.dpi.wi.gov/reportcards/get-file?level=school&schKey=009378&fileName=SRCDetail_Public_Beaver_Dam_High_2015-16_009391-009378.PDF

Wisconsin Department of Public Instruction. (2017). ACT aspire achievement and progress. Retrieved from https://wisedashsecure.dpi.wi.gov

Wisconsin Department of Public Instruction. (2017). ACT Aspire - Readiness. Retrieved from https://wisedashsecure.dpi.wi.gov

Wisconsin Department of Public Instruction. (2017). ACT statewide - ACT benchmarks. Retrieved from https://wisedashsecure.dpi.wi.gov

Wood, K. D., Roser, N. L., & Martinez, M. (2001). Collaborative literacy: Lessons learned from literature. *The Reading Teacher*, *55*(2), 102-111.

APPENDIX A

ENGLISH LANGUAGE ARTS COLLEGE AND CAREER READINESS

STANDARDS FOR READING

from http://www.corestandards.org/ELA-Literacy/CCRA/R/

Key Ideas and Details:
CCSS.ELA-LITERACY.CCRA.R.1
Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
CCSS.ELA-LITERACY.CCRA.R.2
Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.
CCSS.ELA-LITERACY.CCRA.R.3
Analyze how and why individuals, events, or ideas develop and interact over the course of a text.

Craft and Structure:
CCSS.ELA-LITERACY.CCRA.R.4
Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.
CCSS.ELA-LITERACY.CCRA.R.5
Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole.
CCSS.ELA-LITERACY.CCRA.R.6
Assess how point of view or purpose shapes the content and style of a text.

Integration of Knowledge and Ideas:
CCSS.ELA-LITERACY.CCRA.R.7
Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.[1]
CCSS.ELA-LITERACY.CCRA.R.8
Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.
CCSS.ELA-LITERACY.CCRA.R.9
Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.

Range of Reading and Level of Text Complexity:
CCSS.ELA-LITERACY.CCRA.R.10
Read and comprehend complex literary and informational texts independently and proficiently.

APPENDIX B

STUDENT READING SURVEY GUIDE

Fostering Successful Reading

Dear Student:

I am a student in the Doctoral Program at Arizona State University working under the direction of Dr. Ruth Wylie. I am conducting a research study to examine the effects of reading strategy instruction on the reading comprehension and reading self-efficacy in high school students.

I am inviting your participation in a class survey about your reading habits and attitudes about reading. Your participation in this survey process is voluntary. If you choose not to participate, there will be no penalty. The results of the survey may be published, but your name will not be used. This survey is a way for me to get to know your perceptions regarding reading.

Although there may be no direct benefit to you, the possible benefit of your participation is an opportunity to share what you have learned and how you feel about reading. There are no foreseeable risks or discomforts to your participation.

Responses will be kept confidential and will not be labeled with names. The results of this study may be used in reports, presentations, or publications but your name will not be known/used.

If you have any questions concerning the research study or your participation in the survey or interview, please contact me at (920) 885-7313 or treptowj@bdusd.org

Sincerely,

Mrs. Jennifer Treptow
Doctoral Student
Arizona State University

Dr. Ruth Wylie
Lead Researcher/Dissertation Chair
ASU Email: Ruth.Wylie@asu.edu
Phone: 480.727.5175

Student Survey

Participant Identifier _____ (example: jen0123)
(3 Letters of Your Mother's First Name and Last 4 digits of your phone number)

There are no right or wrong answers, please be as honest as possible. Your survey responses will be kept anonymous.

Directions:
Please select your level of agreement with the following statements:

1=This statement is never or almost never true of me	2= This statement is usually not true of me	3= This statement is somewhat true of me	4= This statement is usually true of me	5= This statement is completely or almost completely true of me	6= I am not exactly sure what the question was asking, please help me to understand so I can answer it correctly.

Please rate your level of agreement with the following statements on your perceptions and motivations for reading.						
I put effort into my English class last year.	1	2	3	4	5	6
I think what I learn in English is important.	1	2	3	4	5	6
I enjoyed what I learned in my previous English classes.	1	2	3	4	5	6
I enjoy my current English class.	1	2	3	4	5	6
I read for fun or enjoyment.	1	2	3	4	5	6

I believe that reading is important.	1	2	3	4	5	6
It is important to me to be good at reading.	1	2	3	4	5	6
I have plenty of time outside of school to complete my reading.	1	2	3	4	5	6
I enjoy school.	1	2	3	4	5	6
Please rate your level of agreement with the following statements on the factors affecting your self-efficacy for reading.						
I easily understand the main ideas of what I am reading.	1	2	3	4	5	6
I consider myself a reader	1	2	3	4	5	6
I believe that I am a good reader	1	2	3	4	5	6
I believe that I can become an even better reader than I am right now.	1	2	3	4	5	6
When I read a story or other text for my classes I understand it.						
I see people in my family reading at home.	1	2	3	4	5	6
Please rate your level of agreement with the following statements about the current reading strategies you use.						
When I read I create pictures in my head of what is happening.	1	2	3	4	5	6
When I read I look up new words I come across.	1	2	3	4	5	6

When I read I predict the main idea of the passages in from titles or subtitles.	1	2	3	4	5	6
When I read passages I stop every once and a while to summarize what I have read.	1	2	3	4	5	6
When I read passages and I don't understand what I'm reading I ask my classmates for help.	1	2	3	4	5	6
When I read and I don't understand what I'm reading I ask my teacher for help.	1	2	3	4	5	6
When I read I guess the meanings of new words in context.	1	2	3	4	5	6
When I read I try to interpret the writer's intention.	1	2	3	4	5	6
When I read I use simple words to replace difficult words.	1	2	3	4	5	6
When I read I predict the main idea of the whole passage from key words.	1	2	3	4	5	6

Student Survey

Name_____ English 11a Teacher

This survey is designed to help me understand your reading motivation and likes/dislikes of reading. There are no right or wrong answers, please be as honest as possible. Your survey responses will be kept confidential.
Directions: Please answer each question by responding to the prompt with a few words or short sentences in the space provided.

1. What are your post-high school plans?

_____

Describe the benefits you see in reading.

_____

Describe what is easy about reading for you.

_____

Describe what is hard about reading for you.

_____

When you struggle with your reading describe what you do to overcome it?

_____

How many books, not including books for school, did you read in the last 12 months?

_____

Describe the reasons you read.

_____

Do you enjoy reading things other than books? What are they?

_____

APPENDIX C

TABLE OF RESEARCH QUESTIONS, MEASURES, AND CONTRIBUTIONS

RQ1: How and to what extent does implementation of sketchnoting in the English classroom affect students' motivation and self-efficacy for reading course material?
RQ 2: How and to what extent does implementation of sketchnoting affect students' reading comprehension performance in English 11?
RQ3: What are the impacts of adding Sketchnoting into the English 11 classroom?

When	RQ	Instrument	Contribution #1	Contribution #2
Pre-Assessment: September Post-Assessment: December	1,3	Student Survey (22 Participants)	Correlation of strategy usage and post-survey responses for motivation and self-efficacy with Null Hypothesis: There is no statistical significant relationship between the use of sketchnoting as a reading strategy and reading motivation, self-efficacy, or reading comprehension	Paired t test of pre-post survey responses with Null Hypothesis: There is no statistical significant relationship between pre or post survey
Pre-Assessment: September Post-Assessment: December	2,3	Qualitative Reading Inventory (4 Participants; Targeted Purposeful Sampling)	Correlation of strategy usage and post-assessment for comprehension with Null Hypothesis: There is no statistical significant relationship between the use of sketchnoting as a reading strategy and reading comprehension	Paired t test of comprehension test ratings with Null Hypothesis: There is no statistical significant relationship between pre and post comprehension test
Pre-Assessment: September Unit 1 Assessment: November Unit 2 Assessment: December	2,3	Reading Skills Assessment (19 Participants)	Correlation of strategy usage and post-assessment for comprehension with Null Hypothesis: There is no statistical significant relationship between the use of	Paired t test of comprehension test ratings with Null Hypothesis: There is no statistical significant

			sketchnoting as a reading strategy and reading comprehension	relationship between pre and post comprehension test
Throughout Intervention Process; 1 observation rating for each student every time the intervention is in use independently; Approximately 5 observation days total	1,3	General Student Observations (22 Participants)	Evidence of engagement & strategy usage	
Throughout Intervention Process; Approximately 10 texts for all students	1,2,3	Student Sketchnote Assessment And Documents (22 Participants)	Evidence of engagement, strategy usage, comprehension	
#1: October #2: December Approximately 10-15 minutes each	1,2,3	Student Interviews (4 Participants; Targeted Purposeful Sampling)	Evidence of sketchnoting impact on student motivation, self-efficacy, strategy usage, reading comprehension	

APPENDIX D

STUDENT READING SURVEY CODES

Student Reading Survey Codes

Reading Motivation Codes	Self-Efficacy for Reading Codes	Strategy Usage Codes
1) Give thoughts on books 2) Higher ACT score 3) Relaxing/healthy activity 4) Learn 5) Better in classes/grades 6) Talking in front of others 7) Everyday skill/Life activity 8) Visualize 9) College and work better 10) Open minded 11) Nothing 12) Enjoyment/Fun 13)Required	1) Analysis 2) Pacing 3) Understanding 4) Images 5) Everything 6) Words 7) Enjoying 8) Interesting 9) Context clues 10) Nothing 11) Time 12) Reading aloud 13) Focus 14)Pacing	1) Ignore words 2) Look it up 3) Ask for help 4) Reread 5) Take a break 6) Keep reading 7)Nothing 8) Just stop/quit 9) Context clues 10) Look for main points 11) Focus more 12) I don't struggle

APPENDIX E

STUDENT OBSERVATION DATA COLLECTION FORM

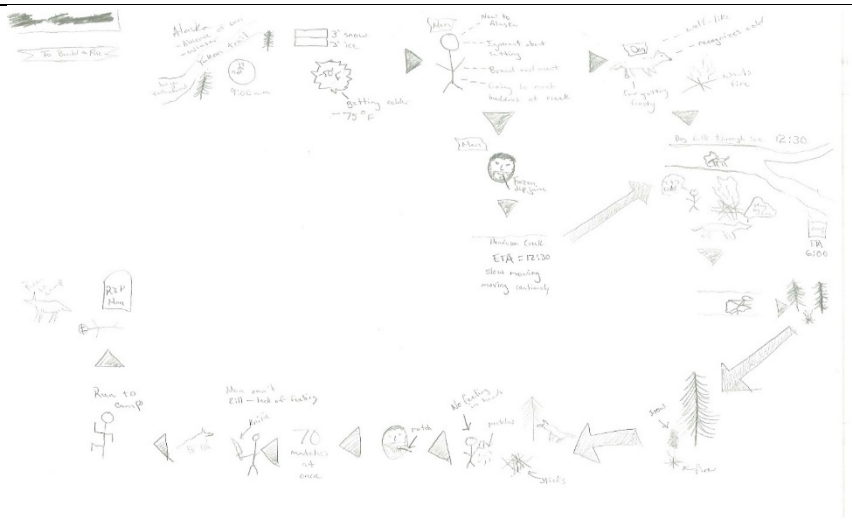
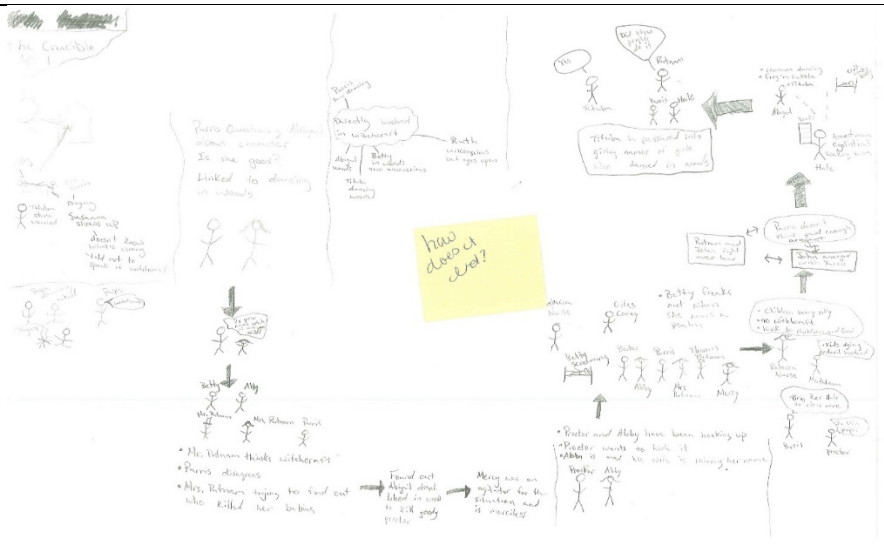
Student Observation Data Collection Form

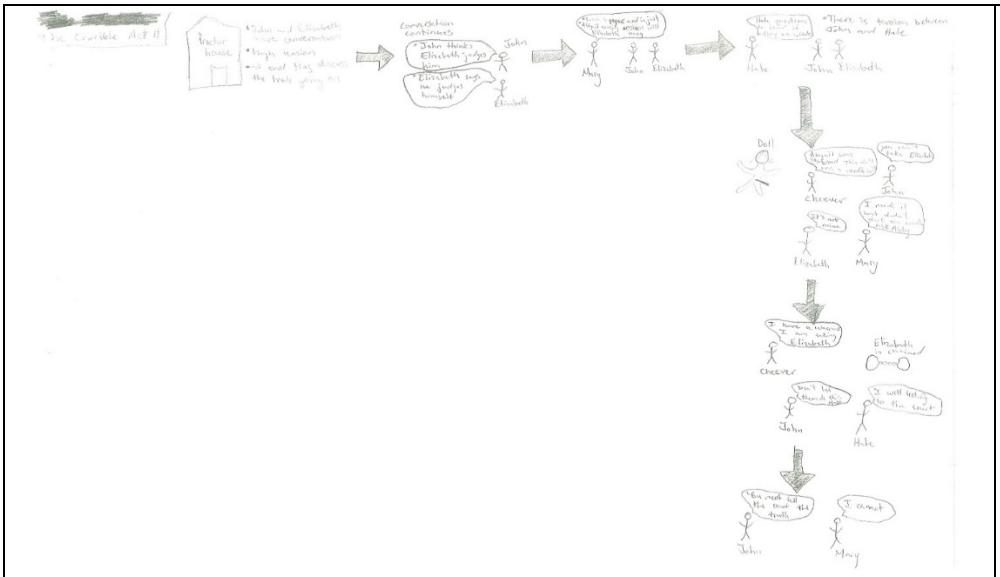
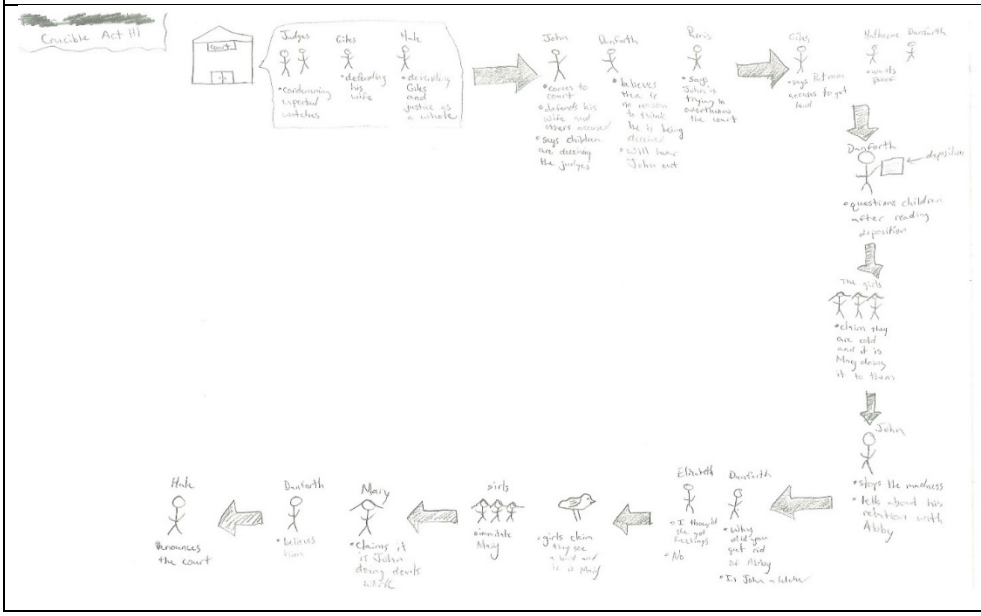
The student observations will be collected throughout the intervention process to collect information that measures the level of engagement the students have with regarding to sketchnoting as a reading strategy. I will complete one observation rating at random times during the class period for each student when the intervention is in collaborative use. The Student Observation Data Collection Form will be a spreadsheet that is printed and can be quickly and easily checked off for each student. There will be approximately 5 observation days total during the intervention process.

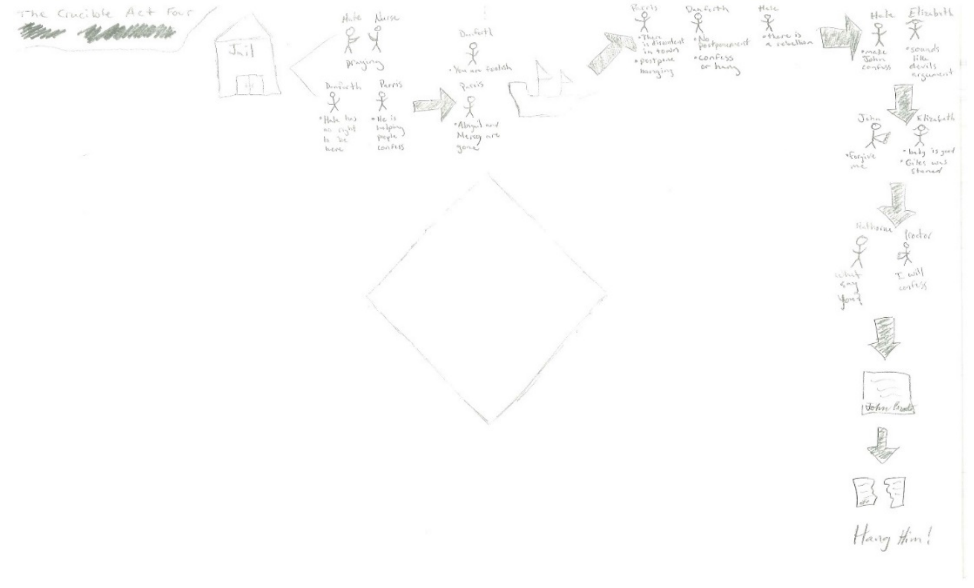
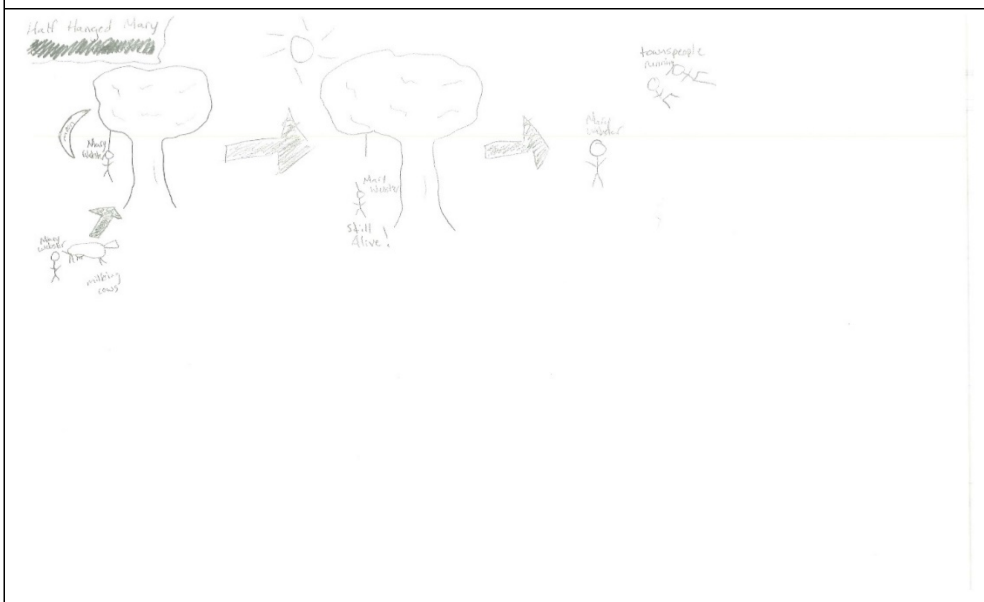
Rating: 5-Always 4-Often 3-Sometimes 2–Seldom 1–Never				
Date	Student Identifier	Actively Interacting with Peers Cooperatively	Working Alone	On Task & Developing Sketchnote

APPENDIX F

STUDENT SKETCHNOTE DOCUMENT SAMPLES

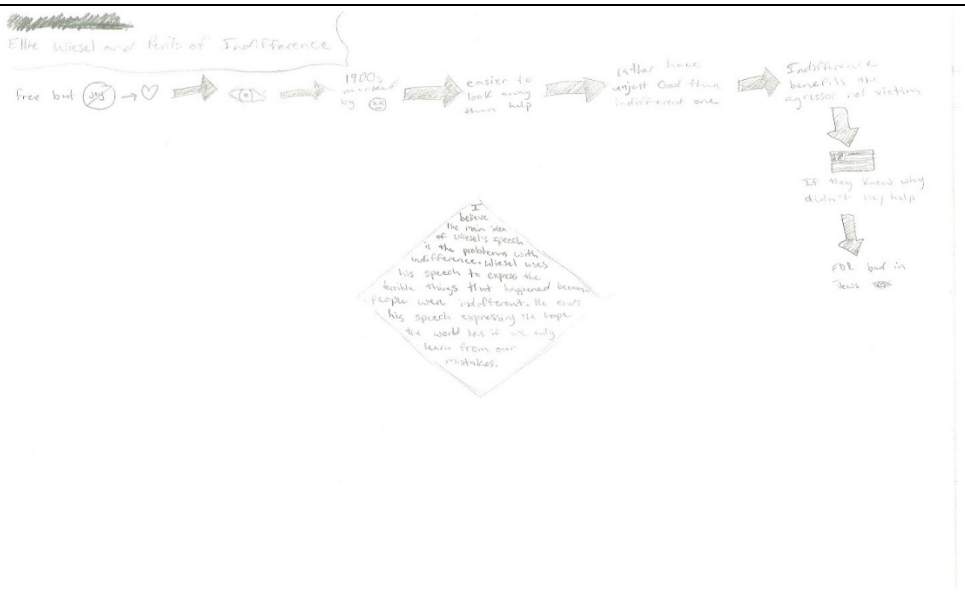
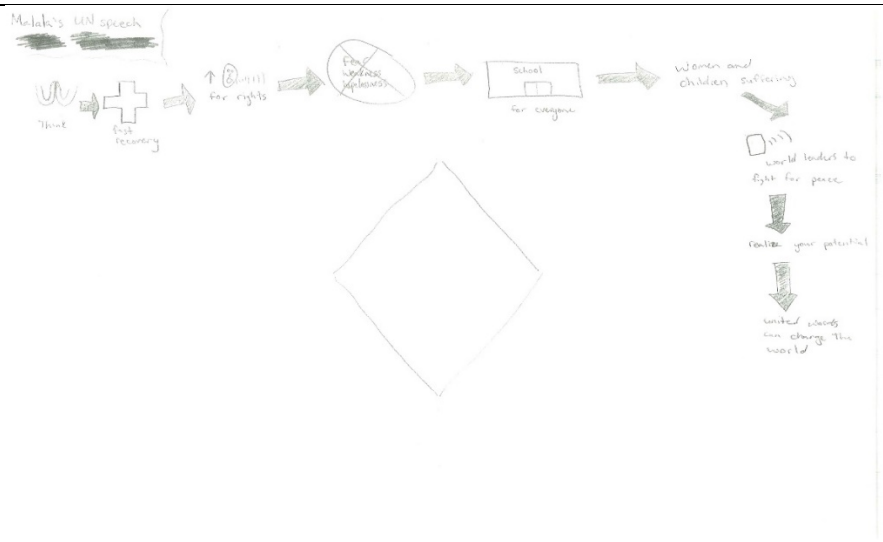
Parker's Sample Sketchnotes	Text Number
	Text #1
	Text #2

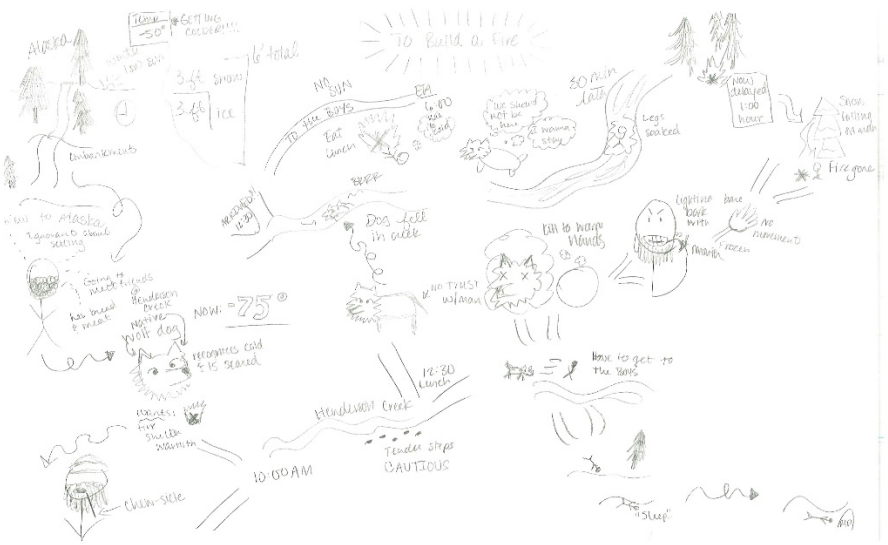
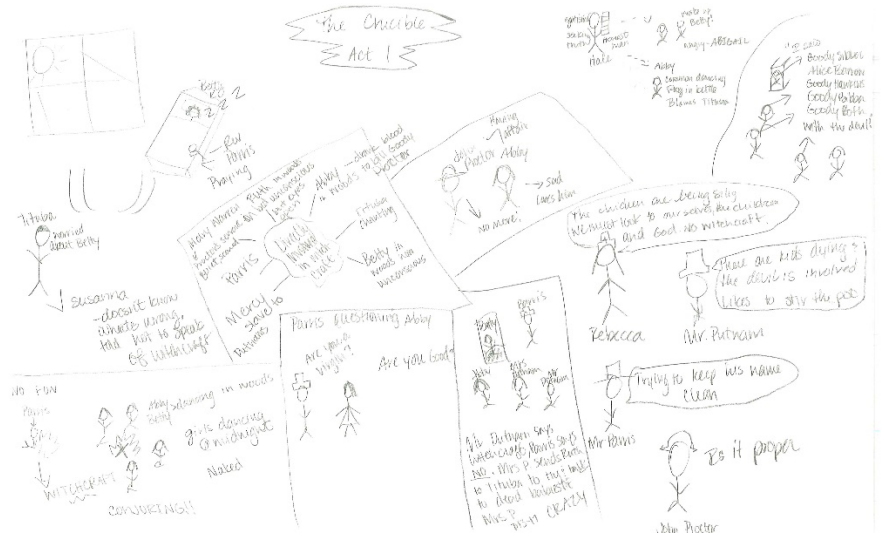
	Text #3
	Text #4

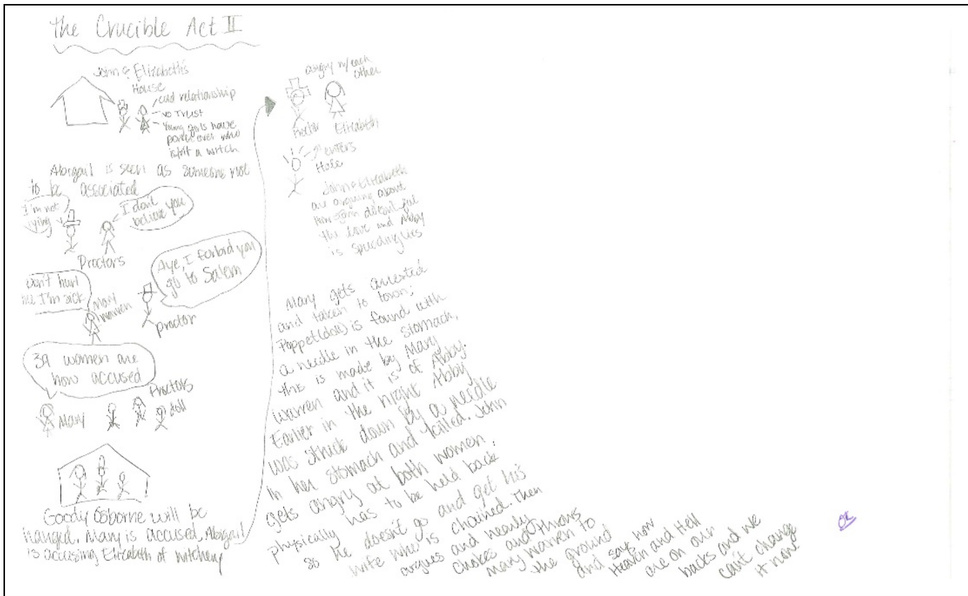
	Text #5
	Text #6

The Crucible Act Four
Jail
Hang Him!

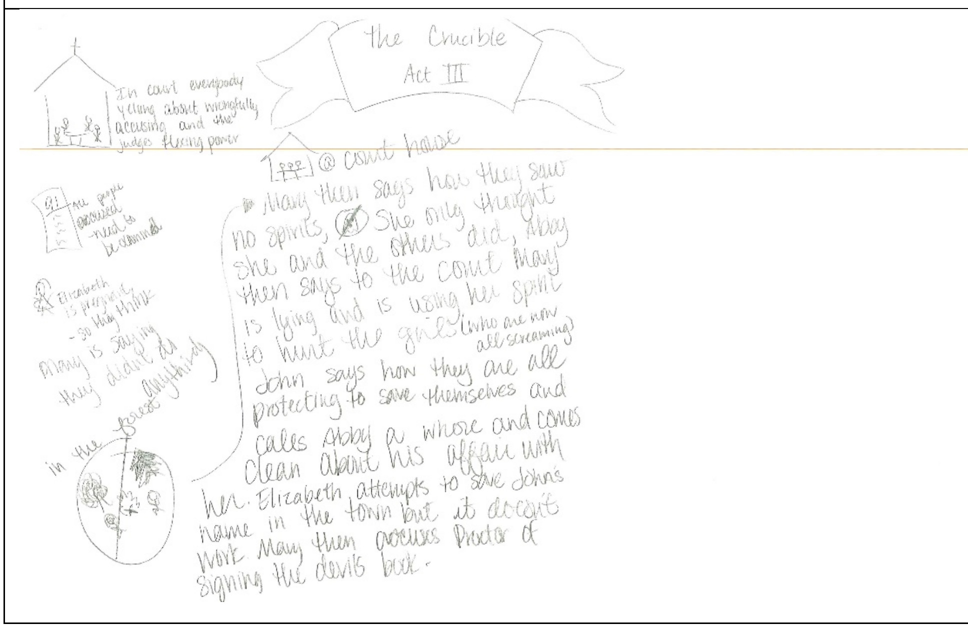
Half Hanged Mary
Still Alive!
townspeople running
milking cows

	Text #7
	Text 8

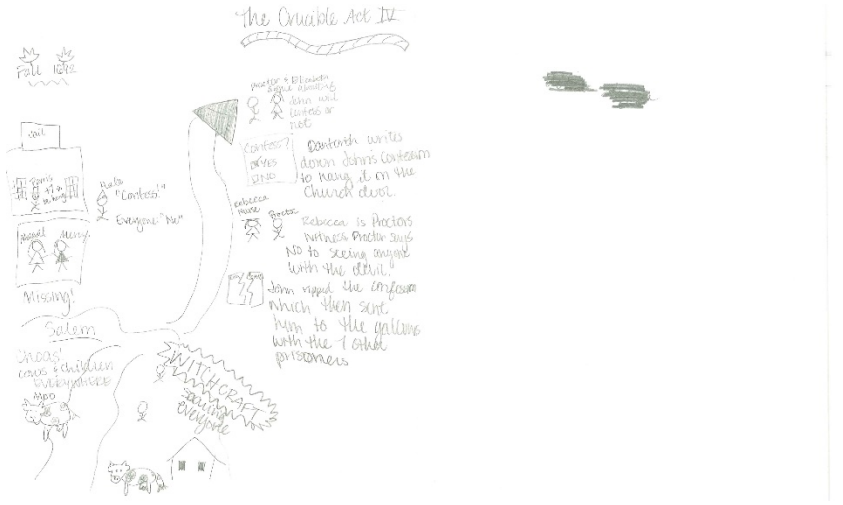
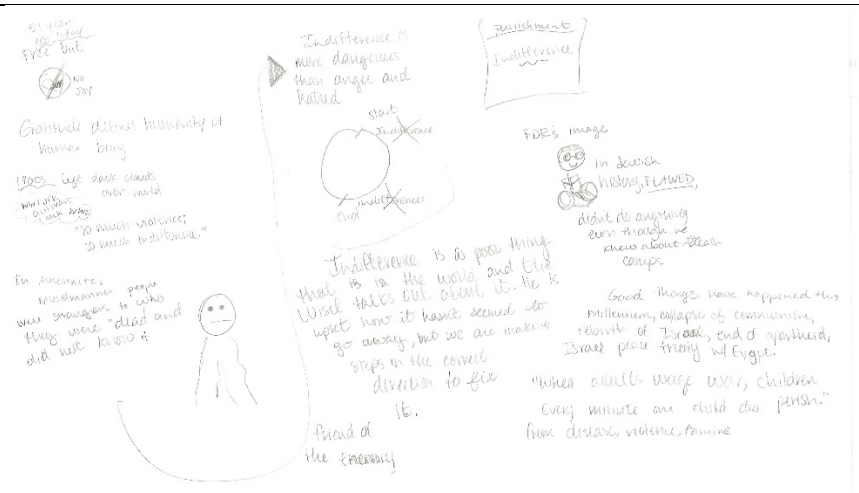
Ashley's Sample Sketchnotes	Text Number
	Text #1
	Text #2


the Crucible Act II
John & Elizabeth's House
cold relationship
No Trust
Young girls have power over who is/isn't a witch
Abigail is seen as someone not to be associated
I'm not lying
I don't believe you
Proctors
don't hurt me I'm sick
Mary Warren
Aye, I forbid you go to Salem
proctor
39 women are now accused
Proctors
Mary
doll
Goody Osborne will be hanged. Mary is accused, Abigail is accusing Elizabeth of witchery
angry w/ each other
Proctor
Elizabeth
enters
Hale
John & Elizabeth are arguing about how John doesn't feel the love and Abby is spreading lies
Mary gets arrested and taken to town; Poppet(doll) is found with a needle in the stomach, this is made by Mary Warren and it is of Abby. Earlier in the night Abby was struck down by a needle in her stomach and killed. John gets angry at both women; physically has to be held back so he doesn't go and get his wife who is chained. then argues and nearly chokes and throws Mary Warren to the ground and says how Heaven and Hell are on our backs and we can't change it now.

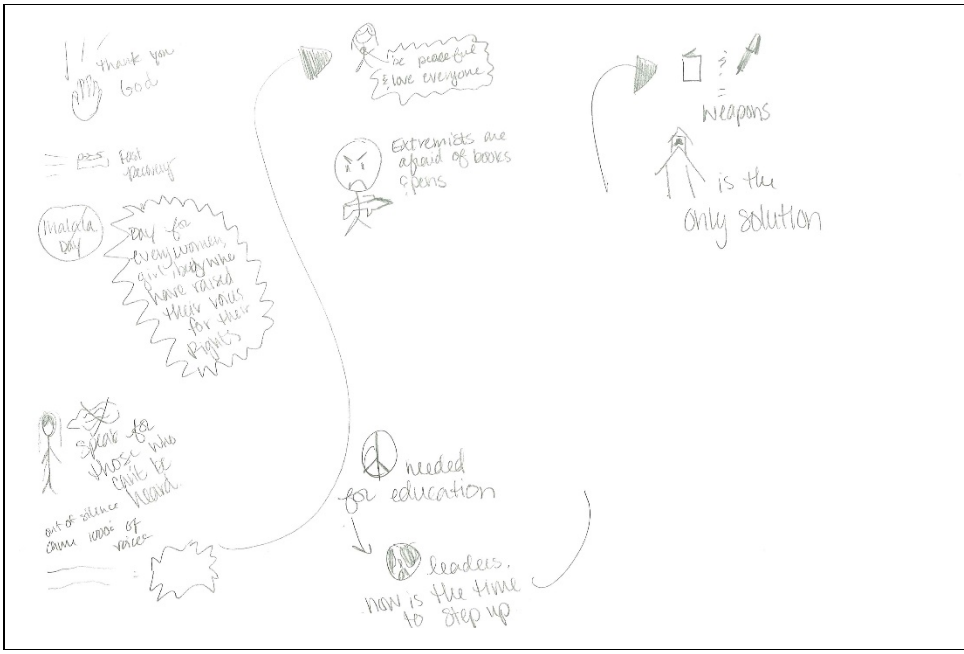
Text #3


the Crucible
Act III
In court everybody yelling about wrongfully accusing and the judges flexing power
@ court house
91 people accused need to be examined
Elizabeth is pregnant - so they think
Mary is saying they didn't do anything in the forest
Mary then says how they saw no spirits, She only thought she and the others did, Abby then says to the court Mary is lying and is using her spirit to hurt the girls (who are now all screaming)
John says how they are all protecting to save themselves and cales Abby a whore and comes clean about his affair with her. Elizabeth attempts to save John's name in the town but it doesn't work. Mary then accuses Proctor of signing the devils book.

Text #4

	Text #5
	Text #6
	Text #7

Text #8


thank you God
Fast recovery
Malala Day
Day for every women, girl, boy who have raised their voices for their rights
speak for those who can't be heard.
out of silence came 1000's of voices
be peaceful & love everyone
Extremists are afraid of books & pens
needed for education
leaders. now is the time to step up
weapons
is the only solution

APPENDIX G

STUDENT INTERVIEW GUIDE

Student Interview Guide

Introduction:

Thank you again for participating in this interview. Your responses will be used to increase my understanding of the effectiveness of using Sketchnoting while reading. When we are finished your responses will be transcribed and I will look for specific patterns in your responses. Your responses will remain anonymous and your name will not be used. Please, when you are giving your responses, do not use your name or the names of other students.

Key Questions

1. How would you describe yourself as a reader?
2. How do you know that you are correctly understanding the text you read?
3. Describe your overall experience with regard to reading course material in English 11? What do you like or not like? What are some successes and struggles?
4. What did you like and dislike about using Sketchnoting while reading texts for English 11? Why do you feel the way you do?
5. How has using Sketchnoting helped you to be a better reader?
6. Do you feel that you understand what you read better when using Sketchnoting while you read? Why? Why not?
7. What value do you see in learning to Sketchnote?
8. How do you think you can continue to use Sketchnoting in English and other classes?

APPENDIX H

STUDENT INTERVIEW CODES

Student Interview Codes

Reading Motivation Codes	Self-Efficacy for Reading Codes	Strategy Usage Codes	Reading Comprehension Codes
1) Positive interest 2) Lack of interest 3) Focus 4) Lack of understanding 5) Collaboration 6) Options	1) Good reader 2) Fluency 3) Lack of interest 4) Lack of understanding 5) Ability to understand 6) Focus	1) Drawing 2) Notetaking (words) 3) Options 4) Focus 5) No collaboration 6) Big Picture 7) Lack of interest	1) Create pictures 2) Logically makes sense 3) Remember details 4) Understand 5) No change/hasn't helped

APPENDIX I

INTERNAL REVIEW BOARD APPROVAL

EXEMPTION GRANTED

Leigh Wolf
Division of Educational Leadership and Innovation - Tempe
-
Leigh.Wolf@asu.edu

Dear Leigh Wolf:

On 10/4/2018 the ASU IRB reviewed the following protocol:

Type of Review:	Initial Study
Title:	Fostering Successful Reading in High School Juniors
Investigator:	Leigh Wolf
IRB ID:	STUDY00008950
Funding:	None
Grant Title:	None
Grant ID:	None
Documents Reviewed:	• Treptow Student Assent Form - corrected.pdf, Category: Consent Form; • Treptow Parental Consent Letter - lgw.pdf, Category: Consent Form; • Student Survey Draft -corrected.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • TEL 713 - Student Interview Questions.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Treptow IRB Protocol, Category: IRB Protocol; • Off-site Authorization, Category: Off-site authorizations (school permission, other IRB approvals, Tribal permission etc); • Leigh Wolf HRPP-IRB Training Certificate.pdf, Category: Non-ASU human subjects training (if taken within last 3 years to grandfather in);

The IRB determined that the protocol is considered exempt pursuant to Federal Regulations 45CFR46 on 10/4/2018.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Sincerely,

IRB Administrator

cc: Jennifer Treptow
Jennifer Treptow