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VISUALIZATION TECHNIQUES TO SUPPORT STUDENTS' READING
COMPREHENSION

By

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A capstone submitted in partial fulfillment of the
requirements for the degree of Masters of Art in Teaching

Hamline University

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CHAPTER ONE

In the Classroom

Chapter Introduction

Students in my language arts/reading course struggle with reading comprehension. In part, they have trouble visualizing words they are reading which is preventing them from understanding the text. To address this issue, the purpose of this capstone is to research and create techniques that will help my students learn how to visualize what they read, with the goal of improving their comprehension. This leads to my research question, *How do students respond to the integration of visualization techniques integrated into their reading/ literacy instruction?* Visualization techniques are the skills taught to students to help them learn to visualize what they read. This question grows out of my professional goals teaching reading to fifth grade students in academic year (AY) 2018/2019. Several experiences in my classroom illustrate the importance of this topic for me as a teacher.

An example from my classroom that signaled the importance of this topic was during a lesson where students were learning about where they lived, starting with their town and extended to their continent. My students worked with a partner to fill out a form that asked for their town/city, county, state, and continent. Using the same map that we had been using for the past week to depict where we live, students began working on that task. I overheard students talking as they pointed to their town/city on the map and then to their state. Then others were heard talking about how they lived on North America and then pointed to it on the map. After the students worked for a week, they were asked to share with the class where they lived. Their answers should have different towns/cities but the rest should be the same, including county,

state, country and continent. Students had difficulty identifying at least one aspect of where they lived but could recall two or three of the locations of where they lived.

Later in the year students were asked again to visualize in their minds where they lived and to share it with a partner. Several students were unable to complete this task or fill out the map. They were unable to visualize a map of which continent they lived on. In talking with the Title I teacher about the situation, she mentioned how the students were unable to visualize words that she was working on, including where they lived. After the lesson on where students lived and speaking with the Title I teacher, I began wondering how to best help my students learn how to visualize what they read.

This question is important to me because according to author Manning (2002), when students have the ability to concentrate on the pictures they create in their minds, this can help students comprehend the text. For example, when a child reads about a cookie that was crunchy they might visualize a bright red apple or they might visualize a whale when the author stated it was like the largest animal in the ocean. As the student visualizes the object being described, it helps them to understand that the cookie is crunchy like an apple or that the animal is as large as a whale. Not all students can use these skills easily as students learn visualization in different ways.

Some of my new students in the current AY 2018/2019 have difficulty with visualization. For example, one of my students had difficulty stating that a story was about baseball during a lesson with the Title I teacher. This student was at the guided reading level R at the end of AY 2017/2018. He has been in Title I services the whole school year and is not an English Language Learners (ELL) student. He was unable to picture a (baseball) when the story mentioned that they swung a bat and the ball went into the outfield. The student stated the story

was about football. The students need further assistance in 5th grade in AY 2018/2019. To better assist my students, I met with the Title I teacher to learn strategies to help my students grow in their reading comprehension. This led to the creation of this capstone project to help students learn important visualization skills needed in reading comprehension.

Chapter One will contain an overview of this capstone project by addressing my students' needs in my classroom, my personal journey, the context for this project, and the significance of this study. The needs of my classroom for the AY 2018/2019 are skills in reading comprehension. This is important information to know about the students so they can be taught the skills needed to become successful at understanding what they read. My personal journey shows what has been learned through personal experience and through my education that explains where I am coming from to complete this project. The context of the project will explain where the students were academically when this project began and what it will do for those students. These topics all lead to why this projects goal of increasing students reading comprehension skills is important for this current school year and for students in the future. My personal journey and background for this capstone is explained next.

Personal Journey

In 2001, a daycare near my hometown in the upper Midwest, hired me to work for the summer. While attending college (2001 -2005), the daycare and Montessori school on campus hired me to work part time helping with the students and cleaning up the space. After graduating from college with a Theology major and a minor in business, a catholic school hired me as the receptionist (2005 - 2007). The school is in a small town 45 miles from a major metropolitan area in the upper Midwest. At this school, I was able to coach middle school softball, basketball and volleyball. I taught faith formation after school on Wednesdays. Next, a church hired me to

work on Sunday's teaching the Children's Liturgy of the Word and in the summers teaching Vacation Bible School (from 2007 until I moved to rural Wisconsin in August of 2017). A variety of experiences from teaching in a preschool and a church as well as coaching sports, lead me to pursue a teaching license.

I am beginning my second year teaching elementary students in the rural Midwest. During my first year, I taught students math, science and social studies. The students taught me a lot about them and myself. I noticed that during a lesson, students were better able to understand and remember what they were taught when they were able to picture in their minds what they were learning. This information helped me to learn more about how to help my students with reading comprehension as my teaching focus was changing from teaching math, science, and social studies to 4th grade students to teaching reading/language arts to the 5th grade students. Because of this, it was decided that going back to school to work towards my reading license in 2018 would help me to learn how to become a better reading teacher and this capstone project that is being completed for my Master's degree will aid in that quest. During this capstone project, I focused on visualization techniques that will increase my student's reading comprehension during the AY 2018/2019 school year. Next, I will explain the context of this project.

Context of the Study

I teach Language Arts and Reading to the 5th grade students in a public elementary school in AY 2018/2019. My class consists of general education students and students on Individualized Education Plans (IEP). Some students will be pulled out of the regular classroom during language arts/reading lessons based on their IEP's.

As the language arts and reading teacher of fifth grade, I have new responsibilities. Research needs to be completed to learn how to best help my students. By the fifth grade, students should be able to visualize and verbalize or retell from the text what they have read at their reading levels (Common Core State Standards, 2018). After speaking with the school Title I teacher, it has been brought to my attention that several of my students struggle with visualizing and verbalizing what they have read. They are not the only students in our school who struggle with this concept.

Because students struggle with visualizing and then verbalizing what they have read, my research question is *how do students respond to the integration of visualization techniques integrated into their reading/literacy instruction?* At our school, kindergarten through fourth grade students who are below grade level in reading are able to get assistance from the Title I teacher. In fifth grade, there is no assistance for students below level in reading unless they are on an IEP.

The expectation of me as a fifth grade teacher is to teach all of my students, including those below reading level, in the general education classroom. This expectation requires me to find time to work with nineteen out of twenty-six students who need intervention for reading skills. Of the nineteen who need intervention, twelve need intensive intervention according to the Title I teacher. Ten of those students need intervention in comprehension intervention and support with verbalization and visualization. This capstone project will help meet the needs of these students and future students.

Expectations of this project will include lesson plans and assessments based on the current standards and include working with those students who need interventions in reading comprehension to increase their reading level and comprehension skills in AY 2018/2019. As

most of these students need growth in visualization and verbalization, I will need to create lessons that will develop their reading comprehension skills. The materials created for this project will support my students in AY 2018/2019 as they learn visualization techniques to increase their reading comprehension.

Significance of the Study

Visualization and verbalization techniques are needed in my classroom to increase reading comprehension. When students are able to visualize what they are reading, it can help them not only understand but also remember what they have read (Chan et al., 1990). This strategy can help students in all academic areas.

It is important to focus on visualization skills. For example, as a coach, I have observed students who were able to see in their minds how to pass the volleyball to successfully pass that ball in practice. The student mentioned to me how she was able to see the pass in her mind before she did it. Those students that could not see in their mind what to do were not as likely to make a complete pass to another student. Students that can visualize in their mind what to do are more likely to be successful in playing volleyball and in reading comprehension. As Mills (2009) stated, visualizing what a reader reads by picturing an image in their mind can help them learn to read new words and understand what they mean .

This project will help not only my current students, but also future students at my school and beyond as students are taught and practice the visualization skills created in this project. According to the Title I teacher, other students in our school, need to practice visualization skills besides the fifth grade students. This project will be significant in helping all students to increase their visualization skills to improve comprehension.

Conclusion

Visualization can increase reading comprehension. Research on reading comprehension will include vocabulary, visualization and comprehension relationships and the students' response to visualization techniques. The research will answer the question, *how do students respond to the integration of visualization techniques integrated into their reading/literacy instruction?* The project will include lesson plans on visualization and verbalization techniques that will increase students reading comprehension. Chapter Two will contain literature reviews on the research of visualization and comprehension such as how students learn using visualization, different strategies, and results of using visualization strategies. Chapter Three will focus on the reasoning for the capstone project and share the context for the project. Then Chapter Four will contain the lesson plans of visualization skills that I have developed for my fifth grade students.

CHAPTER TWO

Reading Comprehension

Chapter Overview/Introduction

Students who struggle with reading can learn new strategies such as visualization to enhance their reading comprehension. My research question is *how do students respond to the integration of visualization techniques integrated into their reading/literacy instruction?* My literature review will create a case for this question. The first section will share in what ways students reading comprehension levels are different and how educators must find the most effective strategies that work with their students to improve literacy proficiency. The second section shares several different reading strategies that work well with teaching reading comprehension. The last section will share the results of visualization case studies that have been researched. This chapter will share the need for reading comprehension in classrooms, how visualization is an important strategy for reading comprehension and show studies that prove how visualization strategies make a difference in students' comprehension.

Reading Comprehension

Reading comprehension is a complex topic to understand, and teach to students. Comprehension is making meaning from what you read. Many teachers and researchers have studied how they can help students who struggle to comprehend what they read but there is no one answer that always works. Comprehension is a cognitive endeavor that uses many skills. According to the RAND Reading Study Group (as cited in Ellerman, Olinghouse, Gilbert, Compton, & Spencer, 2017), reading comprehension requires constructing the meaning from the written word in a mental representation. Students who are able to create a mental picture in their mind are more likely to construct meaning from the text. The Rand Reading Study Group (as

cited in Ellerman et al., 2017) stated that as a reader continues to read they will update their mental representation by enacting their working memory. As students continue to read, they will add knowledge in the form of mental pictures in their minds to the knowledge that they already have. The Study Group also concluded that students that struggle to read and comprehend, struggle with creating a mental picture and cannot find the meaning of the word in context that skilled readers can. Students who are unable to comprehend what they have read cannot recall or find a mental picture in their mind when reading.

General comprehension strategies. Gregory and Cahill (2010) noted that it is difficult to know where to start when teaching students comprehension skills. The authors described how teachers have tried many different strategies to teach students reading comprehension. Gregory and Cahill (2010) reported of the many strategies available to teach comprehension skills. The following four are the most frequently used.

Making connections is where students learn and remember a new idea because they connect it to something they already know. For example, a student has knowledge about horses because they own several horses and have had to help take care of the horses. Then in a new book they learn the big word “equestrian” riding and can understand what it is based of the pictures showing horses and the words that go with the word equestrian of riding. The student connected the word with knowledge they already had about horses.

Visualizing is when students create detailed mental pictures about the story they are reading. Visualizing allows students to use mental pictures before, during, and after reading to understand the text. Gregory and Cahill (2010) mentioned how the students make mind movies when they are visualizing. It is the making of these mind movies that enable students to picture what they read in their mind and practice writing it down. The outcome of making these mind

movies is that students are more likely to remember the new information (Gregory & Cahill, 2010).

Asking questions is when students ask questions to help them understand the text. The answers to those questions can be placed on a chart or students can write their own notes. The more thoughtful the questions, the more the students learn and remember. A thoughtful question is when students are able to connect the text with another text, with prior knowledge, or with the world. The key behind questioning is for the students to ask the questions, although the teacher can help direct questions if the students need help (Gregory & Cahill, 2010).

Inferring happens when students use what they already know, as well as the words of the author to merge the information in their minds. However, Gregory and Cahill (2010) described this strategy as more complex for student to learn. It takes a lot of practice for students to be able to infer what is happened with texts that leave a lot of information out. Asking questions can help students learn to infer from a text.

These four strategies are used the most for teaching students reading comprehension skills according to Gregory and Cahill (2010). Another author agrees with Gregory and Cahill about their four strategies to teach reading comprehension but also add two more strategies which will be explained in the next paragraphs.

According to Mills (2009), proficient readers should consistently use six strategies. The six strategies are: activate prior knowledge, make inferences, use knowledge of text structures, visualize, generate and answer questions, and retell and summarize. The four strategies listed by Gregory and Cahill (2010) are included in Mills (2009) six strategies. These six strategies will be explored in more detail starting with prior knowledge.

Prior knowledge. Mills (2009) noted how students will activate prior knowledge to help them learn new words that they read. The author also acknowledged that many students have different social and cultural backgrounds that give students different prior knowledge. These differences in prior knowledge can affect how students learn to comprehend what they are reading. An example would be to compare a student who moved because of unsafe living conditions to a student who lived in a safe, loving house their whole life. Their prior knowledge would be considerably different. To access prior knowledge, Mills (2009) mentioned that students' conversation before reading a book about what they think it will be about can help to access the student's social and cultural background knowledge. This conversation before reading can help students access their prior knowledge and will help other classmates learn about new vocabulary and concepts in the book if they don't have any prior knowledge on the topic. Prior knowledge can also help students make inferences when they are reading.

Making inferences. Inferential thinking according to Mills (2009) is going beyond the literal meaning of the text. The author revealed when a student can take their prior knowledge and applies it to the text that they are reading; they can infer new meaning from the text. To go beyond the text to find creative and imaginative ways to understand it is how students can infer new information from a text (Mills, 2009). An example of encouraging inferential thinking would be giving students a text that is missing information. Then they would need to use their prior knowledge along with the words in the text to infer the meaning. It can also help students to infer meaning from the text if they are aware of text structures.

Use knowledge of text structures. It is important for students to learn the different text structures, but Mills (2009) reminds teachers that text structures can change as blogs, wikis, and other electronic communication change over time. However, even if text structures change over

time the author states that when a student knows what type of text structure they are reading it can help them understand the information from the text. A narrative text will help students know it is a story sharing information and an informative text would help them infer that the text they are reading is trying to teach them something. Another strategy that can help students become proficient readers is to visualize as they read.

Visualize. When visualizing, students use the mind's capacity to imagine what the author's words are communicating to the reader (Mills, 2009). The result of visualizing is that students use their mind to create mental images. Students are creating images in their mind of what they are reading would look like as a movie or photo book of images. The mental images created will link new ideas to prior knowledge. However, Mills (2009) described how some students were unable to bring to their mind or think of a mental picture from what they read. She continued that students unable to picture in their mind what they hear, read, smell, or touch will have a harder time understanding the new information. To help students create visuals in their mind they can ask more questions to help them create those mental pictures.

Generate and answer questions. This is where students generate their own questions about the text and then search for the answers (Mills, 2009). The author asserts that teachers should encourage students to generate and answer their own questions. Students learn by asking questions and finding their own answers and not by being given questions to answer by the teacher. The more questions students ask about the text the more information they will learn that can help them activate their prior knowledge, infer other information from the text or visualize what is happening in the text (Mills, 2009). One example Mills (2009) shared is for one student to pretend to be a character from the text and have another student interview them. In this example, students need to come up with their own questions to ask and the person playing the character would need to be very familiar with their character. Another strategy to help students comprehend the text is to retell or summarize the text.

Retell and summarize. Students need to learn how to retell and summarize a text. But retelling is more than telling the story; it is picking the most important information out of the story according to Mills (2009). Students will need to learn the skills for how to pick what parts of the text they should retell. For example, a student would need to learn that telling about how a pig is pink is not an important fact but that the pig made a house out of brick is an important fact to retell. In order to learn these skills, students need to be taught the strategies. Mills (2009) recommended using the five essential self-monitoring comprehension strategies of predict, ask questions, retell, infer, and summarize. These strategies help students learn how to retell or summarize a story. She commented that struggling readers can have difficulty with learning the strategies.

Many students struggle with learning reading comprehension. Elleman et al. (2017) proposed that struggling readers lack content or domain knowledge, and vocabulary knowledge that prevent them from learning reading comprehension. Content or domain knowledge is the content in informational text according to the author. Students that spend time reading informational texts build their knowledge in multiple domains. As students learn more they can look back on their prior knowledge to help them learn new words.

Students also lack vocabulary knowledge. Elleman et al. (2017) added that instruction in vocabulary can make a large impact on students' reading comprehension. As students learn more vocabulary words and can picture what they look like, they are more likely to remember the new word. Students learn two to three root words per day while most new words are learned through reading (Nagy, Anderson, & Herman, as cited in Ellerman et al., 2017). Since most students learn new words through reading, it is very important for students to practice reading. The more children read the more new words students will learn. The authors mentioned that

students who struggle to read do not learn as many new vocabulary words to boost their reading comprehension. This information on vocabulary is important to show how knowledge of words helps with comprehension. In order for students to visualize what they are reading they need to know the word they are visualizing. To help students learn reading comprehension teachers need to teach visualization strategies that include vocabulary words.

Visualization Strategies

Visualization strategies can improve reading comprehension. There are many different visualization strategies that can be used. Researchers have used some strategies in small controlled settings to see results of teaching the visualization skills. These strategies are called Visual-imagery (Chan, Cole & Morris, 1990), Picture-It (Naughton, 2008), Rainbow Dots (Moore & Lo, 2008), and Story Mapping (Staal, 2000). Each strategy will be explained along with how it helps to improve reading comprehension. The first strategy is visual-imagery.

Visual-imagery strategy. Visual imagery entails “‘making pictures’ of what is being read and aims at promoting active processing and organization of text propositions to enhance comprehension and recall” (Chan et al., 1990, p. 3). They continued to explain that students will be taught visualization skills verbally or they will be taught verbally and with pictures in the visual-imagery strategy. These two methods will be explained next.

Chan et al. (1990) shared the three steps for teaching students verbally. First, Chan et al. (1990) explained that a teacher would instruct students to read silently. Second, the authors stated that an audio tape of the story would be played while students were instructed to read the story silently with the audio tape. While listening to the audio tape and reading the story again, the student should try to picture in their mind what is happening in the story. Third, the authors

continued that the student would be instructed to read it again a third and last time, picturing in their mind what is happening while they read it.

For the second method of teaching verbally and visually, Chan et al. (1990) explained the steps. First, a teacher would give the same instructions as the verbal strategy of having the student read the book silently (Chan et al., 1990). Second, students would read the story a second time while looking at the images such as cardboard figures or actual pictures. As students read the story, they would see the images following the sequence of events. For example, the teacher could move the images to follow the story as the students read aloud (Chan et al. 1990). Third, the authors stated that the students read the story for the third time and they will be instructed to picture in their mind what is happening as they read without using the pictures. Students were taught either strategy in a case study completed by Chan et al. (1990).

The visual-imagery strategy explained how students could picture in their minds an image of what they were reading, to help them comprehend and remember what they have learned. Chan et al. (1990) explained the results of the case study that found a higher percent of students using both methods of visual-imagery increased their reading comprehension while students who only re-read the story had a smaller increase in their reading comprehension. The researchers continued that students with reading disabilities showed a significant difference with reading comprehension based on three session, when they visualized using a picture display over just visualizing the story and then had an even less percentage of increasing their reading comprehension when they only re-read the story. The next visualization strategy is called Picture-It.

Picture - It strategy. Naughton (2008) described the strategy Picture-It as “a comprehensive, all-ages strategy that uses pictures and other visual elements to enhance comprehension by illuminating story structure, promoting questioning and discussion of the story, and teaching vocabulary” (p. 65). Using Picture-It as a strategy to teach students reading comprehension skills, Naughton (2008) advised that students need to know the five elements of the story: the setting, characters, problem, attempts to resolve the problem, and resolution.

Before a teacher can instruct students on the strategy of Picture-It, they need to have the students read the story and find the five elements of the story (Naughton, 2008). Naughton (2008) shares that after the students find the five elements of the story; they will draw or sketch the elements of the story to create a visual picture of the story. This could also be called a story map. To find the five elements can be difficult for some students. To help them Naughton (2008) shares “the acronym STORY:

S--setting

T--talking characters

O--oops, a problem!

R--attempts to resolve the problem

Y--yes, the problem is solved” (Naughton, 2008, p.65)

The story map helps students follow steps to comprehend the story. Teachers can decide how to draw the story map. The class could discuss it as a whole group, such as what to draw for each of the five elements. Students could also work with a partner or students that are familiar with this method could complete the story map on their own.

Picture-It is creating one picture that has all five elements in it (Naughton, 2008.) The author advised that this picture is a powerful “mnemonic” of the story and its meaning. The

picture-it method is to take the small details of the story and put it together so students can see a visual of the whole story and how the pieces fit together. When students put it together they are drawing one picture that shows the five elements. It can be a picture only or pictures and words that represent each of the five elements. Students can have conversations about what to include or not include in the story. This can lead to some great learning moments. Naughton (2008) advised that the teacher could discuss with the students the theme of the story and then place those words onto the final picture. This will help students remember key words as well as the point of the story.

Naughton (2008) also advised teachers to point out the key words for the students and then have the students discuss where those key words fit in the five elements of the stories picture. Picture -It is a great strategy that includes making a visual of the main points of the story. This strategy helps students to pick out the main points and create a mental picture on paper that students can recall in their memory. Another strategy to help with reading comprehension is the rainbow dots strategy.

Rainbow dots strategy. According to Schumaker, Deshler, Alley, Warner, and Denton (as cited in Moore & Lo, 2008) rainbow dots were a strategy based on Multipass. Moore et al. (2008) went on to explain that the Rainbow Dots strategy had four comprehension strategies that are labeled with colored dots. The four strategies and their colors are visualization (blue), summarization (orange), inferences (purple), and connections (yellow). The authors noted how any color can be used as long as it remained consistent. In the Rainbow Dots strategy students are responsible for marking their text for those strategies. Next, will be explanations of each of the four strategies.

The first strategy Moore et al. (2008) explained that the visualization strategy has four steps. The first step has the teacher develop the mini-lesson ahead of time. The second step is for the teacher to give students an easy picture book that has all of the pictures covered up so the students cannot see them. The students will then read the book, putting a blue dot sticker in any place where the student is able to picture in their mind of what is happening in the story. The third step has students share their examples of what they visualized. The fourth step, after having a class discussion, has the students removing the coverings from the pictures and then discussing if the pictures are similar or different than what the students pictured in their minds. The second strategy of the rainbow dot strategy is summarization.

It is recommended by Moore et al. (2008) that summarization only be used once students are able to use the visualization strategy and that it works well with an interactive read aloud approach. The teacher role in summarization is to demonstrate the strategy to the students first during the read aloud (Moore et al., 2008). After each paragraph is read, the author continued that the teacher will stop and summarize out loud to the students what the paragraph was about. Moore et al. (2008) then added that the teacher would put an orange sticker at each place the teacher paused and gave the verbal summary. Then the students can practice this same thing on a new story. The authors advised, as the students finished they could talk about where they paused to summarize, what happened and why they chose to summarize at that spot. After this lesson, students could use both visualization and summarization during reading. Inferences are the third rainbow dot strategy.

An inference is a difficult strategy and requires more examples and practice according to Moore et al. (2008). The authors explained that the inference strategy was where the teacher would read a story that was missing information. The context of the story would help the

students figure out what was missing and predict what would happen (Moore et al., 2008). The authors continued that students should be taught to put a purple dot sticker in the place where they make inferences in the story. Then the teacher should ask the students to share the inferences they learned in the story. Moore et al. (2008) advised how this step needed to be practiced over several weeks because of how difficult it was for students to learn. As students were able to successfully make inferences, they can add e visualization, summarization, and inferences in the same story. The fourth and last strategy is making connections.

Making connections would use the yellow dot stickers. Moore et al. (2008) described it as making connections with the text while reading. The teacher will demonstrate by reading a book aloud and pausing to place a yellow dot. The teacher would share with the students how that part of the story reminded them about when something similar happened to them when they were little (Moore et al., 2008). They advised students to share if they could make a connection to something in their life. Possible connections students could make according to Moore et al. (2008) were text to text, text to self, and text to world. After students learned this strategy they should be able to use all four strategies in one story. Another strategy to use in reading comprehension is story mapping.

Story mapping strategy. Story Face is similar to story mapping but was developed by Staal (2000). Story Face is different than story mapping in that it provides shapes with labels in the form of a face. Staal (2000) advised that a child has recognized faces since they were babies. It is easier to look at shapes that form a face than a story map with a lot of boxes with labels. Staal (2000) explained that the story face had two circles for eyes that should be labeled as the setting and the main characters. The eyes have eyelashes to add descriptors or secondary characters. She continues that the nose is for the problem and the mouth has circles to show the

main events on the left side that lead to the solution of the story on the right side of the face. Story Face is a visual that the students know and can use to help them understand the story. As Staal (2000) mentioned to her students, you look with your eyes for the setting and characters, you use your nose to find trouble or the problem, and you look at a mouth to see how people feel such as a smile or frown so the mouth can communicate ideas and emotions that lead to the solution.

Each of these strategies of Visual-imagery (Chan, Cole & Morris, 1990), Picture-It (Naughton, 2008), Rainbow Dots (Moore & Lo, 2008), and Story Mapping (Staal, 2000) use visualization techniques to help students visualize the story they are reading. As students visualize the story, they are able to add the information to their memory to help them comprehend what they have been reading. Many of the strategies used visualization, summarization, inferring and questions and answers. These strategies will be incorporated into the lesson plans of my project. Next will be an explanation of how visualization strategies affect reading comprehension.

Visualization Strategies Outcomes

There are many visualization strategies teachers can use in their classroom. Visualization strategies need to be effective. This section lists three different studies and their results using different visualization strategies. First, Guerrero (2003) is a Title I teacher who completed a study of 2nd grade students using webbing and story maps while creating mental pictures as they read stories. Second, Rader (2010) created a pilot program with first graders to use visualization techniques that answered nine specific questions that help them address what they have read. Third, Park (2012) shared a study of middle school students in book club or book groups who used visualization to see the characters and how they relate to the text, to

themselves, and to the world. Each study will be described in the next paragraphs starting with the 2nd grade Title I study.

2nd grade Title I study. Guerrero (2003) was a second grade Title I teacher who conducted a study to help students learn how to comprehend while reading and to see which strategies students improved with most. For this study, Guerrero (2003) chose students based on criteria of the school district at a rural elementary school in Texas. She chose students based on data from running records, Primary Phonics readers, comprehension questions, observations, and benchmarks. Using these assessments, fifteen students were chosen to attend the study. Of the fifteen students, seven were Hispanic, eight were Anglo, seven were girls, and eight were boys. Guerrero (2003) organized the study to take place during one hour and thirty minute sessions after school, two days a week. She then broke the hour and thirty minutes sessions into two forty-five minutes sessions. During the sessions Guerrero (2003) chose visualization strategies that have worked in the past with her Title I students.

Guerrero stated, “Visualization, whether mentally or creating graphic organizers and pictures visually, will assist students to better comprehend and recall” (2003, p. 4). The visualization strategy consisted of showing students a picture and asking them what they think would happen in the story. Students would brainstorm ideas from that picture. Then Guerrero (2003) would read the text that went with the picture. The teacher stated the students found the picture did not help them very much with reading. Next, she asked the students to close their eyes and to think of a mental picture in the mind while listening to a section of a story read to them. After the story, students shared their mental pictures. Then, Guerrero (2003) showed the students the picture that went with the story and found, “the better picture was the picture created in their head” (p. 6). Each session the students would read the story twice. The first time

is to figure out the words and the second time for fluency and recall (Guerrero, 2003). The teachers reminded the students to create a picture, movie or cartoon in their heads as they read. Some props were used in the process. Guerrero (2003) used props of story maps and webbing to help students write down what they learned in the story or graphic organizers for students who had a difficult time picturing in their minds the story. Next, Guerrero shared the results of the study.

The study looked at the results at the end of the four week period. “Out of fifteen research subjects, ten students were having difficulty only with comprehension and not with reading the text as indicated through Running Records analyzed” (Guerrero, 2003, p. 6). Five students did not increase their reading level based on the *Primary Phonics* running records used at the school. Guerrero (2003) advised that “from multiple choice tests I administered, all five students showed an increase in the number of comprehension questions they answered correctly from reading text from *Primary Phonics* (Maker, 1977) readers on their own” (p. 7). Nine students showed an increase in their reading levels and in the comprehension questions while one student showed regression according to the study. The one student, according to Guerrero (2003) did not qualify for special education and was working at his potential. Guerrero noticed certain gains over the course of the study.

Guerrero (2003) noted that higher gains happened with students that were attending her Title I services because they spend more time learning than just two days a week in the extended day program. She also believed it was successful because, “at-risk students had more consistent practice than the extended day children,” (Guerrero, 2003, p. 9). Guerrero believes that sessions should be shorter and more frequent. Overall she showed in her study that visualization is a powerful tool to use to help students learn reading comprehension.

This study supports my project because the results show that students who used visualization strategies, that made mental pictures in their head as they read, showed improvement in the reading comprehension questions assessed at the end of the study. Even though one student regressed and five students did not increase their reading levels. All but one student was able to increase their reading comprehension according to the running records completed. This answers my research questions of *how do students respond to the integration of visualization techniques integrated into their reading/literacy instruction?* because the study showed that students improved their reading comprehension by integration of visualization techniques taught to them by teachers. The next study is nine key questions for visualization.

Nine key questions for visualization. Another study was conducted by Rader in 2010. Rader based her study on the numbers from the 2003 National Assessment of Educational Progress (NAEP) cited in Rader (2010). The NAEP test stated that 37% of fourth-grade students and 26% of eighth-graders students scored below basic reading standards. Rader then stated that one third to one fourth of U.S. students are not at basic reading level. She believed that reading was the most important skill taught in school and was the gateway to all other knowledge (Rader, 2010). Students that struggle to read and comprehend what they read can become more proficient in reading by learning how to reflect on what they have read. To reflect on what you have read a student needs to learn to retell.

Rader (2010) advised that one of the key components of retelling is visual imagery.

It is a skill that enables people to (a) form pictures in their minds that represent the content of what they have just heard or read, (b) organize and store new information, (c) form ideas and draw conclusions, (d) retrieve information, and

(e) explain what they understand to others by turning the pictures or images back into words. (Rader, 2010, p. 127)

Because of this information, Rader decided to create a pilot program to determine if visualization and oral language skills will increase students reading knowledge with the use of a specific set of nine questions. The pilot program was a 2-year program implemented at a urban elementary school using 1st grade students to retell a story. The school demographics where Rader's (2010) research took place were mainly Hispanic or Latino students and white students. In the pilot program, there were 69 students. Of the 69 students, 33 students would receive the intervention and 36 students did not receive the intervention. Rader (2010) noted that all of the students in the pilot program were identified with a speech and language delay and were at risk for reading failure. Before starting the program the students were given a pretest.

Rader (2010) created the pretest and posttest that consisted of a paragraph spoken to the students. Students were asked to listen to the paragraph. While listening to the paragraph students were asked by their teacher to make pictures in their mind about the story. When the story was finished they were to retell what happened in the story. In order to check the retell, Rader (2010) checked the number of preselected concepts from the paragraph and the number of words in their retell. The students were asked to say what the story was mostly about. Rader (2010) also made a rubric for scoring this assessment. She conducted the pretest in January and the posttest in May. Between the pretest and posttest students were taught nine key questions to help them keep the verbal descriptions from retelling the story so it was easier to retell the story according to Rader (2010). The teachers taught the nine questions slowly over several months of the study so the students could practice each question. The questions were taught on a weekly basis by certified classroom teachers (Rader, 2010). The teachers were given a script to use as a

teaching tool of those nine questions. At the end of this study, Rader used the results of the nine questions, the pretest, and the posttest.

According to Rader (2010), “Specifically, knowledge and usage of the nine key questions improved student development of visualization and oral language skills” (p. 129). The students that received the visualization and oral language training were able to give more detailed retellings of the paragraph. Rader (2010) pointed out that one class did make gains even though they were not in the program. That class also had a paraprofessional who assisted students with additional help which might be the reason for the gains according to Rader (2010). Overall, more students gained comprehension knowledge through this program based on the individual scores of students on the DRA Benchmark scores of the schools state testing results (Rader, 2010).

“Recent gains in educators’ knowledge of the reading process have given them the tools to help the majority of students learn to read at the level required to function as effective individuals, workers, parents, and citizens in today’s world” (Rader, 2010, p.130-131). Rader (2010) challenged researchers to put this knowledge in the hands of the schools so students could gain access to these skills and learn to read.

This study supports my project because the results show that students who used visualization strategies showed improvement in the reading comprehension of individual scores on the DRA Benchmark scores of the schools state testing results. This study showed that students improved their reading comprehension by integration of visualization techniques taught to them by teachers.

Visualization with book clubs. Park conducted a book club study in 2012. Park believed that teachers should offer more than just reading strategy instruction. Teachers should offer a set

of resources for both written texts and the texts of student's lives (Park, 2012). Park's study shows how visualization can be a tool for critical literacy and reading comprehension. The book club groups shared how they visualize people and the world as they read the texts. The book clubs are a yearlong qualitative study of three book clubs that meet after school (Park, 2012). The book club members are early adolescent girls in seventh and eighth grade. There are fourteen, seventh graders with seven white, five black, one Asian, and one biracial student. The nine, eighth graders consist of two white, four black, one Asian, and two biracial students. These students were considered proficient readers (Park, 2012). The students were placed into three different book groups based on grade level and schedules. Five students left the program after four months. The students met every two weeks, in the school building, after school, on a voluntary basis to discuss books in the book club according to the author.

The book clubs did not have an agenda. Students were able to pick what book they would read and they decided what they would talk about at each meeting according to Park (2012). As one student stated when asked what they were sharing in the book groups, "But, are you inferring, are you synthesizing, and are you visualizing the characters in your mind, are you questioning the characters and are you questioning the author, are you making connections, like text to text, text to self, text to society, text to nature - all those connections," (Park, 2012, p. 630). Students would visualize the characters and connect it to their world views. Park conceptualized the book clubs for students to practice reading as social and critical (2012).

The book club meetings were audio recorded and Park (2012) kept field notes. Observations were noted, interviews were conducted of the student participants but Park advised that most of the analysis was of the transcripts from the book club meetings. In the book club meetings students would talk about how they visualized the characters as fat, thin, black, white,

scruffy, or other descriptors. Park stated, “Visualizations reveal the students’ subjectivities or worldviews and can prompt meaningful discussions on race and gender,” (2012, p. 633).

Students, according to the author, made text to world connections mostly followed by text to text connections. Most of the students make connections to the world based on their cultural and social status noted the author. Students created visuals in their minds as they read that resulted in their meaningful discussions after reading the book. Every member of the group was able to use their visualization skills to be full participants in the book study.

Visualization in book clubs can be a springboard for discussions on literary characters, and social and cultural identities (Park, 2012). Book clubs can happen without visualization but if used it can have teachers and students discuss difficult issues in multiple texts and the world. Park (2012) made note that it is important what teachers ask students to visualize and that visualization is very important tool for students to use in critical literacy and other literacy texts.

This study supports my project because the results show that students who used visualization strategies showed improvement in the reading comprehension as shown with their meaningful discussions of their book study. The study showed that students improved their reading comprehension by integration of visualization techniques taught to them by teachers. I will incorporate meaningful discussions in my lesson plans by including visualization strategies used in the book study.

Conclusion

This chapter shared why reading comprehension is needed in classrooms, how visualization strategies are important for students to learn reading comprehension and showed studies that prove how visualization strategies improve student reading comprehension. My research question, *how do students respond to the integration of visualization techniques*

integrated into their reading/literacy instruction? was explored through the research in this chapter. The first section of this chapter shared how students' reading comprehension levels are different and how a teacher has to choose the strategies that work well with their students. The second section shared several different reading strategies that work well with teaching reading comprehension. The last section shared the results of visualization case studies that have been researched and documented showing how students increased their reading comprehension using the visualization skills taught to them.

Chapter three will share the important details of my project. It will explain the reason for this project, the context, and research method behind this project as it answers my research questions of *how do students respond to the integration of visualization techniques integrated into their reading/literacy instruction?*

CHAPTER THREE

Product Description

Chapter Introduction

Viewing myself as a teacher researcher, I am using data from my classroom and from traditional educational research (Mills, 2018) to address a problem of practice. As the fifth grade reading and language arts instructor, my students will be assessed to see where they are at on their reading benchmarks. This can effectively increase their reading comprehension by helping me to create lesson plans based on their needs made known from the assessment. My students demonstrated on their benchmark from the AY 2017/2018 that sixteen out of twenty-seven students need additional support in reading comprehension. The Title I teacher who worked with most of the students during the AY 2017/2018 also noticed a significant difference in many students' ability to visualize during lessons. The data from the AY 2017/2018 benchmark lead me to my capstone question *how do students respond to the integration of visualization techniques integrated into their reading/literacy instruction?*

Research case studies, identified in Chapter Two, document how students who used visualization techniques showed an improvement in their reading comprehension. The research described in Chapter Two also examined visualization strategies and how students responded to the strategies.

Chapter Three will share how the research provided in Chapter Two supported my research question. The first section, will describe how I approached the project as an action researcher with the pragmatic worldview. The pragmatic worldview was used for this project because the project will solve a problem in my classroom. Then applying the pragmatic

worldview along with what I learned in my review of the literature, it will answer my question and support the solution to my classroom problem.

The next section provides a summary of the theoretical background that informed my project and capstone question. During the review of the research, three different studies were identified that documented improvement in students reading comprehension by using visualization techniques. The three research studies are visual-imagery study (Chan et al., 1990), story mapping study (Guerrero, 2003), and nine visual imagery questions study (Rader, 2010).

Next, this chapter will give a description of the setting/audience of where the project will be used after its completion. This chapter will explain this capstone project as a capstone project complied of three units of visualization strategy lessons. These lessons will include visualization techniques that show an improvement in student's reading comprehension according to the research in Chapter Two. Then, it will explain the timeline used to complete this project as starting in August 2018 and being completed in the first week of December 2018. Last, will be a summary of Chapter Three.

Research Theories

The research theory behind this project is on the theoretical cognitive process of visualization. Mnguni (2014) researched the topic of the theoretical cognitive process of visualization for science education. Visualization helps students think and process what they are learning. Mnguni (2014) mentioned how the cognitive process of visualization took three stages. The first stage is internalizing. After a person has seen through their eyes an image, they internalize the word but the word is not meaningful. The second stage is conceptualizing the visual models. A person's short and long term memories work with the visual image that was internalized to make sense of the visual. The memories help a person to make sense of what

they see. The last step is externalization of visual models. This is when a person can take what they have seen, understand what they have seen and then express using words or pictures to share with others what the person has learned. The lesson plans created in this project are based on this cognitive process of visualization.

Studies Supporting the Project Design

Literature reviewed in Chapter Two, influenced how this project would be created. The theories of visualization strategies for my project would be based on the case studies that showed how students improved their reading comprehension by adding visualization techniques into their classroom routines. One case study on visual-imagery strategies showed improvement in reading comprehension in just three sessions. Another case study on story mapping showed how ten of fifteen 2nd grade students increased their reading comprehension from creating visuals of what they read in their mind or with graphic organizers. One last case study on nine key visualization questions resulted with students being able to retain their knowledge over the course of two years and increasing their reading comprehension. These case studies show evidence to support my capstone project of creating lesson plans using visualization strategies. My project will be based on those theories of visualization strategies that were most effective as shown by the case study results. The three case studies will be explained in more detail how they influenced my project.

Visual-imagery research study. Students who are able to visualize or picture it in their heads like a movie are more likely to remember and understand what they have read (Chan et al., 1990). A research study was completed on visual-imagery strategies. Some students used the visual-imagery strategies during their lessons and some of the students did not use the visual-imagery strategies. The results of this study as Chan et al. (1990) documented were that students

who were able to visualize or visualize with a pictorial display, show more growth in three training sessions than students who only read or re-read the same text. Another study completed on visualization strategies that increased reading comprehension is called story mapping.

Story mapping research study. Using visualization techniques whether mentally or using graphic organizers and pictures can help students have a better understanding of what they have read (Guerrero, 2003). The results of a second grade study showed where ten of the fifteen subjects showed improvement of reading comprehension through running records that were analyzed by Guerrero (2003). The other five showed improvement of reading comprehension questions even though they did not show an increase in their reading level advised Guerrero (2003). Yet, the results of the study showed all students improving their reading comprehension. Another visualizing strategy is having students visualize nine key questions.

Nine key questions research study. Rader (2010) created a pilot program that used visual imagery for students to retell the story. The study by Rader (2010) showed that students who have a speech and language delay benefited from the visualization strategy instruction. Students in the first grade who used these nine questions to retell the story maintained their skills learned in this study from first grade into second grade. As this study indicates students reading comprehension has improved through visualization imagery.

This capstone project will include ten lesson plans that will include strategies from those three research studies. It will include visualizing, inferring, summarizing, and asking and answer questions. Research and sources needed to implement this project will include guided lesson plans from the Visualizing and Verbalizing Unit by Nanci Bell. Bell has guided lesson plans that I will use as a guideline to help me write my lesson plans for this project.

Because of these research studies, this capstone project will include visualization strategies for my students who are struggling with reading comprehension. The research shows how students who learn visualization techniques are more likely to comprehend and retell what they have read. My project will include lesson plans that teach students visualization techniques. My project will be explained in more detail in the next two sections.

Setting/Audience

My capstone project is intended for a fifth grade classroom in a rural area, a one hour drive from a major metro area in the upper Midwest. The district has 432 students with a typical class size between 27 and 36 students. Of those students 50% of the students are at least proficient in math and 46% in reading according to the state test scores. The demographics of this school district are 96 % white with 32% of the students on free or reduced lunches. The audience for the new lesson plans is my 5th grade Language arts/ Reading students. They will use the lessons to practice visualization skills to increase reading comprehension.

Project Description

My 5th grade language arts students lack visualization strategies to help them with reading comprehension according to their benchmark assessment at the end of AY 2017/2018. This capstone project will consist of ten lesson plans that have students practice visualization techniques. As students learn the new visualization technique they will move on to the next lesson.

The lessons will not be implemented until after this capstone project is completed. The lessons that will be created will include a pretest and a posttest for at the beginning and ending of each unit. The purpose of the pre- and post- test is to provide data to help me evaluate the

degree to which the students are becoming proficient with using visualization strategies and if this is influencing their reading comprehension.

Timeline

This project was started the summer of 2018 where the first three chapters were written. The project and Chapter Four were written and completed in the fall of 2018. The capstone project will be completed in December of 2018. The ten lessons created during this project will be implemented in my classroom in January of 2019.

Summary

Chapter Three explained how my research question, “*how do students respond to the integration of visualization techniques integrated into their reading/literacy instruction?*” was answered through research. The research explained how visualization techniques show an increase in students reading comprehension. The visualization techniques were used to create several unit lesson plans to use in my 5th grade classroom after the completion of this project. Chapter Four will explain in more detail the unit lessons.

CHAPTER FOUR

Conclusions

Introduction

Children love to imagine when they are small. Being able to imagine a picture in their mind can help students retain and comprehend what they read. This project was developed to help 5th-grade students in my classroom who are below reading level and struggle with reading comprehension. From careful research and communication, the Title I teacher advised me that these students are severely lacking in visualization skills, vocabulary and reading comprehension. In order to help these students grow in their reading comprehension, I wanted to answer the question, *how do students respond to the integration of visualization techniques integrated into their reading/literacy instruction?* I will address this question through research and creating lessons to teach my students visualization skills that will be implemented in my classroom after the completion of this project.

This chapter will share reflections of creating lesson plans to insert visualization techniques in my classroom. I will look back at the research in chapter two and reflect on how it shaped my project and introduce a new source used in creating my project. Then I will reflect on what research still needs to be completed and what limitations this project has at completion. The chapter will end with thoughts on how this project benefits teachers, students, and the teaching profession.

Reflections

Research reflections. When I started researching for this project, I had just completed my initial teaching license and was completing my first year of teaching. I did not have experience teaching students reading up until the school year 2018/2019. I was expected to teach reading to half the students in the 5th grade, all of them struggling with reading comprehension and visualization skills. This was a daunting task. When I started researching visualization, many things came up but not specifically about visualization. I had to narrow down my search in order to find visualization and reading. I knew I wanted to research visualization because that was what my students lacked for reading comprehension.

Writing reflections. I found it a struggle to get into writing this paper. It has been many years since I wrote a large paper or project and this is by far most extensive. I found that the first chapter and this chapter was the easiest to write. I also discovered it is hard not to write so many I's in a paper. I wrote in first person for my chapter one, and had too many I's. Chapter two was more difficult for me. I had to learn and read a lot of material to decide what to include in my paper and what not to include. I found many articles that mentioned visualization but not many on direct visualization skills and their outcomes. Through reading and writing this paper I have learned so much more about visualization and reading comprehension that will aid in my project and in future lessons I plan for my students. I found that I wrote best when I understood the environment that I need to write well.

Closing reflections. Overall, I have learned that I can learn and write a large informational paper. The best way to learn about something new is to start reading about the topic and then to dig deeper to find meaning in what you read. I did that with this project. I have

a deeper understanding about reading comprehension and students' need for visualization of words and stories.

Literature Review

To research my topic I wanted to learn about reading comprehension and how important it is for students to learn. Comprehension is a cognitive endeavor that uses many skills to understand. Reading comprehension has a direct link with visualization skills. According to the RAND Reading Study Group (as cited in Ellerman, Olinghouse, Gilbert, Compton, & Spencer, 2017), reading comprehension requires constructing the meaning from the written word in a mental representation. Students who are able to create a mental picture in their mind are more likely to construct meaning from the text. The Rand Reading Study Group (as cited in Ellerman et al., 2017) stated that as a reader continues to read they will update their mental representation by enacting their working memory. Gregory and Cahill (2010) mentioned how the students make mind movies when they are visualizing.

In order to teach students skills to help them with reading comprehension teachers have to decide on what skills are the most important to teach. Many teachers and scholars use different methods as they do not agree on all strategies or skills. Gregory and Cahill (2010) and Mills (2009) agreed on four strategies, one being visualization. They are making connections, visualization, asking questions and inferring. These four strategies were included in the lesson plans that I created for my project.

Curriculum Development Process

After writing the first three chapters, I found a new source of information from a teacher at school. I used *Visualization and Verbalization* written by Bell (2007) to create the visualization lesson plans. Bell has used visualization and verbalization skills to help her

students improve their reading comprehension with great success. The template used was a literacy action plan used in a class from Stout University. The lessons that I created were based on the lesson from the *Visualization and Verbalization* book but include questions to make connections, infer information and ask students to make mind pictures.

Implications

Initially, I hope to learn a way to teach my students' visualization skills that would significantly improve their reading levels. As I began to create and research this project, I learned that there was so much more to learn about how students comprehend. This project has changed how I teach in my classroom. I have begun to think about how my students learn and understand what they read.

Based on my research, my delivery of the curriculum needs to change. I need to add visualization and vocabulary to all of my lessons to increase comprehension. The research shows that students need to be able to visualize, summarize, infer, and create and answer questions. In January 2019, I will add the ten lessons to my curriculum.

Limitations

The lessons were created for any grade, with any background. The lessons can be tailored to match the students reading level and reading abilities. It can also be taught with any subject including math, science and social studies that have words for students to picture in their minds. As teachers use these lessons they bring their own learning's and limitations. Those limitations are in how they adapt the lesson based on their background and if it is appropriate for the student. Each student learns differently and at their own pace. The lesson need to be changed based on the students needs and can have limitations based on the instructor creating those lessons.

Another limitation could be the students who come into my classroom without a growth mindset. If students don't buy into learning how to visualize, then they will not benefit as much from these lessons. It is important for students to have the growth mindset when going into these lessons. Some of my students are upset and feel they are in the low reading class. This has affected their work in class. I am encouraging them to take ownership of their learning during their reading lessons.

Future Research and Projects

The research for this project found several studies to show students progress with visualization. The more research and studies completed on visualization will help the growth of visualization in schools. This project leads to more research and a possible study to review the results so I can measure the impact in my classroom. I look forward to learning as much as I can about visualization and how it helps reading comprehension. There is more I want to learn about reading comprehension. Most of the articles I read mention how visualization is used. More research needs to be completed with visualization.

I will begin the first lessons of visualization with my students in 2019. I will complete a benchmark test with students before these lessons. Then I will complete a benchmark test after teaching the students the visualization skills. I plan to make careful notes on the students' process. I will continue using these lessons and look for ways to improve them. Other researchers might want to explore more on this topic. Other teachers at my school will also use these lessons and share with me their findings.

Professional Benefits

After completion of this capstone project, I will share my research and capstone project with my teachers as part of my professional development plan. I will share what I have learned

and the results of my students using the visualization and verbalization skills. By training other teachers on visualization skills they can help their students. The teachers and Title I teacher have already determined that the students need more visualization skills and I hope this project can help your students grow in their reading comprehension. I will explain for teachers to start slowly teaching the students about visualizing words before moving onto sentences, paragraphs, and short stories. The teachers will be able to change the lessons to help their students in any grade or subject taught. I look forward to helping them with this task.

Conclusion

Being able to read and comprehend what you are reading is a skill some students struggle with in school. In order to help students learn the needed skills to increase their reading comprehension, they need to learn visualization skills. My project is a set of ten lessons that must be completed in order. After each lesson, the student will have increased the number of words that they can visualize in their mind. The lesson will increase from one word to eventually a short story. These visualization skills will, according to Gregory and Cahill (2010), help students remember what they have read.

This project was challenging, but I have learned a lot about myself as a writer and as a researcher during this project. I created this project to meet the needs of my students, and other students at my school who struggle to visualize as they read. This is not a one size fits all project but can help most students with reading comprehension. I look forward to sharing this project during professional development at my school and seeing a difference in my students' reading comprehension.

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