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USING GRAPHIC NOVELS TO TEACH ECONOMICS CONTENT TO HIGH  
SCHOOL STUDENTS WITH EXTENSIVE SUPPORT NEEDS

By

Caroline M. Fitchett

B.A., University of Louisville, 2017

M.Ed., University of Louisville, 2020

A Dissertation

Submitted to the Faculty of the

College of Education and Human Development of the University of Louisville

In Partial Fulfillment of the Requirements

For the Degree of

Doctor of Philosophy

in

Curriculum and Instruction

Department of Special Education, Early Childhood, and Prevention Science

University of Louisville

Louisville, Kentucky

August 2023



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A Dissertation Approved on

July 18, 2023

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Caroline C. Sheffield

## DEDICATION

This dissertation is dedicated to  
my late stepmother who was so excited to have

“two doctors in the family!”

*- Dr. Alisa Powell*

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To my younger siblings, little cousins, and any future nieces/nephews or future family I may have, I hope this stands as a reminder to follow your dreams - whatever they may be!

## ABSTRACT

### USING GRAPHIC NOVELS TO TEACH ECONOMICS CONTENT TO HIGH SCHOOL STUDENTS WITH EXTENSIVE SUPPORT NEEDS

Caroline M. Fitchett

July 18, 2023

The purpose of social studies instruction in school is to facilitate the growth of competent citizens (National Council for the Social Studies [NCSS], 2013). Despite the recognized benefit of social studies instruction, emphasis on this subject has decreased over time, and has ultimately been termed a “dispensable subject” (Fitchett & Haefner, 2010). Social studies is an even more marginalized subject area for students with disabilities (Zakas et al., 2013). Expanding the research in this area is not only necessary to improving social studies academic content acquisition but is also likely to facilitate greater independence for students post-school – and by extension, improve their quality of life (White et al., 2018). Graphic novels are a popular independent reading choice for both children and adults; however, only recently have graphic novels started appearing as instructional materials in classrooms. Students gravitating to GNs for independent reading prompted the beginning of their use in the mainstream English language arts (ELA) classroom (Barter-Storm & Wik, 2020). The purpose of this study was to investigate any potential differences in student outcomes (i.e., social studies content acquisition and student engagement) when using graphic novels (GN) or traditional adapted informational text (TAIT) to teach economics concepts to high school students with ESN. Another purpose of this study was to understand both classroom teachers’ and students’ perceptions of the use of graphic novels to teach social studies content. While this study did not demonstrate



clear and consistent separation of the two conditions, there were points at which GNs appear to be associated with higher engagement and content acquisition. Another finding of this study, although not addressed as a specific research question, was that text preference appeared to predict both engagement and content acquisition.

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## CHAPTER ONE

### INTRODUCTION

Upholding “liberty and justice for all” for future generations is contingent upon our actions now, as educators, to recognize the responsibility of delivering deep and meaningful social studies instruction. An excellent education in social studies requires educators that are not only well grounded in social studies instructional practices, but also understand the impact of high-quality instruction on student post-secondary outcomes. The purpose of social studies instruction in school is to facilitate the growth of competent citizens (National Council for the Social Studies [NCSS], 2013). At its essence, citizenship has been described as “the belief that all members are active participants in society” (Connors & Donnellan, 1993).

Despite the recognized benefit of social studies instruction, emphasis on this subject has decreased over time, and has ultimately been termed a “dispensable subject” (Fitchett & Haefner, 2010). This has largely been attributed to the pressures of statewide assessments mandated by the No Child Left Behind act in 2002. Teachers and school personnel were forced to reallocate instructional time, greatly impacting time dedicated to social studies, an already less-prioritized subject area.

Social studies is an even more marginalized subject area for students with disabilities (Zakas et al., 2013). In addition to the decreased time dedicated to social studies instruction, students with disabilities encounter a range of additional barriers to accessing instruction. Challenges in accessing instruction throughout all content areas persist (e.g., text comprehension, inquiry, problem-solving), and in some cases are amplified depending on social studies lessons being taught (Scruggs et al., 2008). For example, abstract con-



cepts such a historical perspective, economic systems, and government structures present additional challenges for many students with disabilities. These challenges are further intensified for students with extensive support needs (ESN) who require the most significant support to access instruction.

### **Students with ESN**

Throughout this paper, the term *students with extensive support needs (ESN)* will be used to refer to the population of interest. Although there is no standard definition for students with ESN, these students are commonly diagnosed with intellectual disability, multiple disabilities, developmental disabilities, autism, and/or complex medical needs. Also referred to as students with moderate and severe disabilities, students with ESN require pervasive and on-going support to access instruction and may participate in their state's Alternate Assessment based on Alternate Achievement Standards (Meier, 2020; Taub et al., 2017).

### **Academic Instruction for Students with ESN**

Prior to the 2000's, students with ESN received an education focused largely on functional and independent living skills. During the 1980's instruction for students with ESN began to focus on students' chronological age. This brought opportunities for students to learn life skills including community-related skills and vocational skills. In the 1990's, educational emphasis for students with ESN shifted to inclusion and self-determination. Most instruction during this time consisted of working with students on choice-making and goal-setting in addition to functional life skills. In the 1990's there was also increased effort to instruct students with ESN in the general education setting (Meier, 2020). Since the passage of the No Child Left Behind Act ([NCLB], 2002), research evaluating academic instruction and outcomes for students with disabilities has increased. NCLB required states to create student learning standards and assessment systems to ensure all students had access to reading, math, and science curricula. This mandate resulted in increased expectations and accountability of student learning.

Students with ESN acquire new skills through a variety of instruction techniques; however, among the most effective of practices for this population is systematic instruction (Browder et al., 2020). Grounded in principles of applied behavior analysis, systematic instruction is a group of instructional techniques that have been demonstrated effective for students with ESN by a large body of research (Collins, 2022). Use a definition from Belva's book.

In addition to daily living skills (Dollar et al., 2012; Murzynski & Bourret, 2007; Probst & Walker, 2017) and vocational skills (Kobylarz et al., 2020; Torres et al., 2022), systematic instructional practices are also effective across academic content areas and grade levels. Although there are numerous systematic instructional techniques, system of least prompts (SLP), constant time delay (CTD), and simultaneous prompting are among the most common and well-documented procedures. These instructional strategies have been used to teach multiple English language arts (ELA) concepts such as text comprehension (Hudson et al., 2014; Mims et al., 2009) sight word recognition (Browder et al., 2009), vocabulary acquisition (Frates et al., 2022; Hua et al., 2013; Jameson et al., 2008), and writing (Pennington et al., 2014). These procedures have been used to teach mathematics concepts such as solving word problems (Cox & Root, 2020; Saunders et al., 2018), subitizing (Jimenez & Saunders, 2019), early numeracy skills (Root et al., 2020b), measurement (Birkan, 2005).

In a quest to better understand teaching ELA and mathematics to students with disabilities, research in teaching science and social studies has been overlooked (Scruggs et al., 2008). The literature exploring science and engineering practices for students with ESN is limited; however, researchers and educators are discovering ways to deliver meaningful science content instruction (Knight et al., 2019; Spooner et al., 2011).

### **Social Studies Instruction for Students with ESN**

The National Council for Social Studies (2010) highlights that social studies education should be accessible to all students, stating that the civic mission of social studies

demands inclusion all every student, including those with disabilities. Due to increased accountability of both teachers and students on academic learning, efforts to identify evidence-based instructional practices have increased. However, social studies instruction for students with disabilities remains the least researched academic content area (Wood, 2020). Despite the lack of emphasis on social studies instruction in special education research, its relevance and applicability to students with disabilities has not been completely ignored in academic literature. In fact, Vakil and colleagues (2010) suggest an interdependence among social studies content and special education. Both citizenship (including the rights and responsibilities of a citizen) and self-determination are outcomes special education teachers strive for their students, especially during transition planning. Promoting and prioritizing self-determination in the classroom can lead to students with disabilities becoming advocates for themselves and empowering them to participate in the community and our democratic system. Such participation in society would also demonstrate a level of citizenship. If these concepts are taught appropriately and reinforced throughout a students' k-12 experience, increased participation in society post-high school could be a result (Lawson, 2003).

Expanding the research in this area is not only necessary to improving social studies academic content acquisition but is also likely to facilitate greater independence for students post-school – and by extension, improve their quality of life (White et al., 2018).

### **Graphic Novels in the Social Studies Classroom**

Graphic novels (GN) are longer comics that often explore more mature topics and can include many different genres (e.g., fiction, non-fiction, biography, memoir, science fiction, mystery, historical fiction). Graphic novels are a popular independent reading choice for both children and adults; however, only recently have graphic novels started appearing as instructional materials in classrooms. Jaffe and Hurwich (2018) attribute the practice of using GNs in the classroom to students themselves. Students gravitating to GNs for independent reading prompted the beginning of their use in the mainstream English language arts (ELA) classroom (Barter-Storm & Wik, 2020). Barter-Storm and Wik (2020)

recognized three benefits of using GNs in the classroom: reduces cognitive load, increases student engagement, and facilitates an emotional connection with the text.

Graphic novels reduce cognitive load in two ways. First, they typically contain shorter sentences and less complex language (Melilli & Green, 2018). Second, the authors can convey a more complex message using pictures and words combined instead of words alone. The images can provide context to the written text which supports processing, and aids in the comprehension of the intended meaning (McCloud, 1994). The use of GNs also increases student engagement. Teachers using GNs in their classrooms have reported increased student task engagement and motivation (Gillenwater, 2012; McGrail et al., 2018). Finally, graphic novels elicit an emotional connection with the text. This emotional connection largely is due to the actions of the artist themselves. The idea of “amplification through simplification” coined by McCloud (1994) gives insight to the appeal of and relatability to the characters. Simplifying the cartoon increases the universality of the character, allowing the reader to be able to see many people (including themselves) in the character. Such a connection makes GNs an ideal medium in which to teach sensitive topics such as culture and social justice.

### **Purpose and Significance of the Study**

In conducting this study, I aimed to both add to the literature on effective practices in teaching social studies concepts to students with ESN, and to further investigate the efficacy of using GNs as an instructional tool. The purpose of this study was to investigate any potential differences in student outcomes (i.e., social studies content acquisition and student engagement) when using graphic novels (GN) or traditional adapted informational text (TAIT) to teach economics concepts to high school students with ESN. Another purpose of this study was to understand both classroom teachers’ and students’ perceptions of the use of graphic novels to teach social studies content.

Independent variables in this study included mini lessons that demonstrated economics-related concepts. Half of the mini lessons were GNs and the other half TAIT. Each

mini lesson (regardless of condition [i.e., GN or TAIT]) included one or two vocabulary words that corresponded with the lesson content, a title page that included the concept to be taught, the content, a concept statement (a sentence that summarizes the “take away” of the lesson), and five comprehension questions. The mini lessons for the GN condition were created by selecting excerpts from the graphic novels, *The Cartoon Introduction to Economics Volume One: Microeconomics* and *The Cartoon Introduction to Economics Volume Two: Macroeconomics* by Grady Klein and Yoram Bauman (Klein & Bauman, 2011). Excerpts were selected by identifying economics-related concepts that could be demonstrated within a relatively short narrative (about 2-3 pages each). Content for the mini lessons for the TAIT condition were generated by using only the narrative text from *The Cartoon Introduction to Economics Volume One: Microeconomics* and *The Cartoon Introduction to Economics Volume Two: Macroeconomics*. Pairing pictures with words within a book or another form of text is common practice for teachers when adapting reading material for students with ESN. To reflect this practice, the addition of pictures paired with the text was generated via Boardmaker Online. Additionally, two questionnaires will be administered to teachers and student participants to evaluate their perceptions of using GNs to teach economics concepts.

Two dependent variables were analyzed in the current study. The primary dependent variable was content acquisition when instruction is delivered using educational GNs or TAIT. Content acquisition was measured by identifying the number of comprehension questions answered correctly after each instructional session. All comprehension questions were aligned with various cognitive learning levels of Bloom’s Taxonomy (Bloom et al., 1956). Student engagement was measured using the Multiple Option Observation System for Experimental Studies program (MOOSES; Tapp et al., 1992) to collect data on several variables. Observers trained in this program coded the videos of each session for three dimensions of engagement behavior: active engagement, passive engagement, and off-task.

The lack of research in both social studies instruction for students with ESN and academic instruction for high school-age students with ESN represent a need for future investigation. Additionally, the lack of research in using graphic novels in the classroom is also sparse. This study will not only add to the existing literature on the aforementioned topics, but also introduce and evaluate a novel intervention with this population when creating access to social studies content.

### **Research Questions**

The purpose of this study was to compare student outcomes (i.e., social studies content acquisition and student engagement) when using graphic novels (GN) or traditional adapted informational text (TAIT) with high school students with ESN. Additionally, social validity of the intervention was also evaluated. Specifically, the researcher sought to answer the following research questions:

1. Is there a difference in economics content acquisition for high school students with ESN when instruction is delivered using educational GNs or TAIT?
2. For high school students with ESN, is there a difference between student engagement levels when instruction is delivered using educational graphic novels or TAIT?
3. What are students' perceptions of the use of and the effects of graphic novels to teach social studies content?
4. What are teachers' perceptions of the use of and the effects of graphic novels to learn social studies content?

### **Conclusion**

While this study did not demonstrate clear and consistent separation of the two conditions, there were points at which GNs appear to be associated with higher engagement and content acquisition. This study also appears to demonstrate a clear relationship

between the two dependent variables (content acquisition and student engagement); that is, higher engagement appears to be associated with greater content acquisition, which is consistent with previous literature on engagement (Horn, 2023; McLeskey et al., 2019). Another finding of this study, although not addressed as a specific research question, was that text preference appeared to predict both engagement and content acquisition.

## CHAPTER TWO

### REVIEW OF LITERATURE

Comic is defined as “juxtaposed pictorial and other images in deliberate sequence, intended to convey information and/or to produce an aesthetic response in the viewer” (Merriam-Webster’s Collegiate Dictionary, 2022). Several key aspects of this definition will be examined throughout this chapter to gain a comprehensive understanding of comics and their germaneness to the k-12 classroom. Graphic novels (GN) are longer comics that often explore more mature topics and can include many different genres (e.g., fiction, non-fiction, biography, memoir, science fiction, mystery). Researchers and educators are beginning to view graphic novels as a means to get children interested in literature (Bucher & Manning, 2004; Gillenwater, 2012; Leckbee, 2005).

Features of the definition above are worth further investigating to understand why the GN can be used as an effective teaching medium. The first part of the definition (“juxtaposed pictorial and other images...”) involves the positioning and sequence of the illustrations used in the comic. Yang (2008) articulates that within a GN, both image and text share narrative responsibility – bridging the gap between the media we watch (i.e., pictorial information such as television and pictures) and media we read. This medium is so powerful that a story can be told by simply positioning two images next to each other. One example from a seminal work, *Understanding Comics: The Invisible Art*, (McCloud, 1993) demonstrates this concept by having the reader view an image of the sun in the sky and the ground below. Next, the reader's eyes are drawn to two pictures placed next to each other (The first picture is the image of the sun in the sky. The second is an image of the sun on the horizon). The message communicated through these images positioned in this fashion



is that time has passed. The sun has set in relation to the first image. In this instance, words aren't necessarily needed to convey this message, but words paired with these images would be needed to communicate more complex ideas. Sheffield et al., (2015) refers to the GN as a "multimodal ensemble" meaning more than one mode of communication is used to convey a message to the reader. GNs are a combination of sequential art (visual stimuli) paired with textual information (McCloud, 1993). This combination is often seen in other media such as newspapers, websites, magazines, and picture books. To comprehend any multimodal ensemble, one must first understand the "grammar" of the communication modes when used in tandem (in this case, sequential art and text). Further, Yang (2008) explains the idea of visual permanence being a defining characteristic of comics and GNs. Unlike media such as films and animation, the information presented in GNs is stationary and only processed at the speed at which it is read. This allows readers to engage with the content at their own pace (Jaffe & Hurwich, 2018). Because of the fixed nature of the GN, a reader can expose themselves to more information at a faster or slower speed. Visual permanence also allows the reader to revisit pages and skip ahead to find information (similar to rewinding and fast forwarding a movie).

Another part of Webster's dictionary definition ("...in deliberate sequence..."), calls attention to the order in which information is presented. As previously stated, sequential art consists of images displayed adjacent to each other in an effort to convey an idea or story. McCloud (1994) articulates we are able to make sense of and manifest stories out of visual stimuli through a phenomenon he calls "closure." Closure, put simply, is the ability to perceive parts, but observe the whole. The example used earlier (the image of the sun in the sky and the image of the sun setting) illustrates the importance of closure when understanding GNs. Closure happens in the space between viewing the images in isolation and formulating meaning from them as a whole thought or idea. Panels and images fracture the space of any given page of a GN, leaving it up to the reader to fill in the blanks of the message (see Figure 1). McCloud refers to GNs as "A medium of communication and ex-

pression which uses closure like no other... A medium where the audience is a willing and conscious collaborator and closure is the agent of change, time, and motion.”

### Figure 1

*Graphic Novel Panel*



### A Case for Comics in the Classroom

Jaffe and Hurwich (2018) attribute the practice of using GNs in the classroom to the students themselves. GNs occupy a growing number of a diverse selection of complex, multimodal genres of literature. Students gravitating to GNs for independent reading prompted the beginning of their use in the mainstream English language arts (ELA) classroom. Barter-Storm and Wik (2020) recognized three benefits of using GNs in the classroom: reduces cognitive load, increases student engagement, and facilitates an emotional connection with the text.

First, GNs reduce the cognitive load for students. The linguistic complexity of the text used in GNs is typically less cognitively demanding when compared to common grade level reading material (Melilli & Green, 2018). GNs typically include shorter sentences and have a lower reading level. Due to more accessible text, GNs have been found to aid in

literacy skills acquisition for struggling or reluctant readers (Freeman, 1998; Galley, 2004; Gillenwater, 2012; Leckbee, 2005; McTaggart, 2005; Snowball, 2005; Versaci, 2001). One reason for this increased accessibility could be due to intentional artistic choices made by the author. Authors can instantly convey complex messages (e.g., mood) through both images and text being processed together, as opposed to processing text alone (McCloud, 1994). The images can provide context to the written text which supports processing, and aids in the comprehension of the intended meaning. A qualitative study conducted by McGrail et al. (2018) examined preservice teachers' experiences using GNs to teach struggling readers in elementary grades (k-5). During the interviews, four major themes emerged based on preservice teachers' comments: motivation, skill development, challenges, and newness to comics as an educational medium. Motivation as well as excitement was observed by several preservice teachers. One participant stated, "He definitely looked forward to it every day and wanted to jump right into guided reading," and another stated, "It builds his confidence up amazingly! If he gets stuck, he's constantly looking at the pictures"(p. 12). Skill development was also noted by the preservice teachers. Preservice teachers commented on comprehension and retention of the content, stating:

Before, he couldn't really remember what happened at the beginning of the story if we were reading at the end of the story. And now, he is remembering everything, he can even tell me what happened in the very first book we read, three books later... (p. 14)

Liu (2004) also attributed the reduction in cognitive load to the dual coding theory (Sadoski & Paivio, 1994). This theory suggests that building mental images aids in the learning of content. The study asserts that art can remove barriers to comprehension by the reader making contextual connections.

Second, the use of GNs increases student engagement. Preservice teachers in the McGrail et al., (2018) study, commented on struggling readers' increased task engagement when reading GNs. One participant stated, "I think it helped the student, especially with,

like, his engagement in the lesson. It was very easy for me to pull out the book and his face light up and want to read it” (p. 11). As mentioned above, increased student motivation is a common outcome of instruction with GNs. Russell et al., (2005) distinguish student motivation and engagement by explaining that “motivation is about *energy* and *direction*, the reasons for behavior, why we do what we do. Engagement describes energy in action; the connection between *person* and *activity*.” A lack of student motivation has been found to arise in students when a lack of reading comprehension is present (Kittle, 2012; Mikami, 2017). Therefore, the task for teachers is to create a reading experience that is both accessible and engaging for the student.

Finally, GNs engage readers in an emotional connection with the content. The responsibility of emotional connection and relatability to the story falls heavily on the cartooning process itself in GNs. The idea of “amplification through simplification” coined by McCloud (1993) gives insight to the appeal of and relatability to the characters. To better understand this concept, McCloud explains:

When we abstract an image through cartooning, we’re not so much as eliminating details as we are focusing on specific details. By stripping down an image to its essential ‘meaning’ an artist can amplify that meaning in a way that realistic art can’t (p. 30).

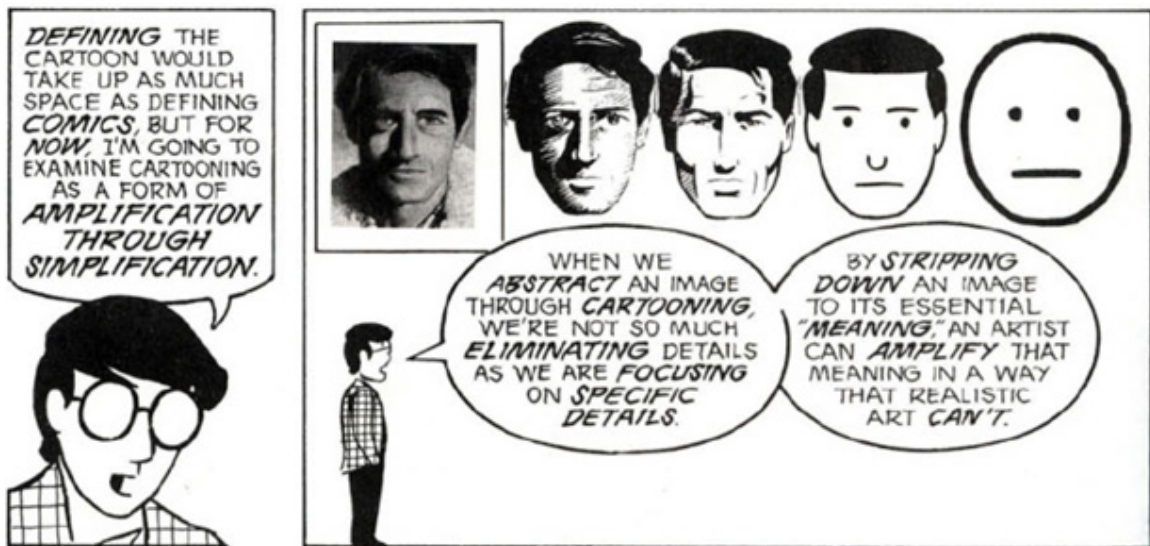
Figure 2 provides a visual to exemplify his point. Simplifying the cartoon increases the universality of the character, allowing the reader to be able to see many people (including themselves) in the character. A similar practice is common in the k-12 classroom. Teachers will often replace names in a mathematics word problem with student names, places in their hometown, or include special interests of their students. They are able to *see themselves* in the academic content being presented. This is done across content and grade levels in an effort to make the content more relatable to the student and increase student engagement. One preservice teacher in the study conducted by McGrail et al. (2018) com-

mented on this concept after working with a struggling reader using GNs:

My study buddy, he makes connections to himself a lot. Like the first book that we read, Otto's Backwards Day, and at the beginning of the book, he walks in on his own surprise party, and ruins it and then his mom is upset with him because he ruined his surprise party. Then my study buddy without questions, he just started talking about things that he's done on his birthday... (p. 13).

**Figure 2**

*Amplification Through Simplification Graphic*



30

Because of the potential emotional connections with the characters, the GN lends itself well to historical content in which the reader is challenged to view an event from a different person's perspective. Further, important topics such as culture and social justice are made more accessible to the reader by using this medium.

### **GNs and Social Studies Instruction**

Since the publication of *Maus* by Art Spiegelman in 1992, the creation of GNs as “historical memory” has been given attention (King, 2012). Enthusiasm for the medium

has become so widespread that *Scholastic*, a leading publisher of children's books and educational material, created a historical GN series. Despite the growing interest in using GNs in social studies instruction, the scholarly literature published on the topic is sparse. Much of the scholarly work in this area are papers that support the use of GNs in the classroom and narrative descriptions of lessons written by teachers or other implementers. The few experimental studies that exist are analyzed in the following section.

A case has been made for using GNs in social studies with students of all grade levels. Lapp et al. (2012) conducted a phenomenological study investigating elementary teachers' ( $n = 60$ ) frequency of and attitudes about current use of GNs in their classrooms. Survey results indicated that “never” was the most common response (58.2%) to if the teachers currently use GNs in the classroom as a curricular component. Interestingly, 30 (54.5%) teachers reported GNs were used as a motivational tool for students, but not an educational tool. Notably, three teachers (5.4%) reported using GNs as an instructional component with struggling readers only and four (7.1%) reported current use for English language learners (ELLs) only. Although the current use of GNs during instruction is relatively low, teachers expressed interest in the idea of adding this literature to their lesson in the future, commenting, “I am going to make it a goal of ours to implement GNs next year across our 4th grade, supplementing the reading curriculum.” Similarly, McGrail et al. (2018) reported preservice teachers' intentions to embrace using GNs for instruction in their future classrooms.

Adolescents are perhaps the most common readers of GNs. In fact, Mackey and McClay (2000) assert that adolescents are “great readers of picture books and other forms of graphic text,” and they are “perhaps the ideal audience [referencing using GNs as an educational tool]” (Cromer & Clark, 2007). The use of GNs for middle and high school students during social studies instruction has been supported by both researchers and teachers (Barter-Storm & Wik, 2020; Boerman-Cornell, 2012; Boerman-Cornell, 2015; Brugar et al., 2017; Carano & Clabough, 2016; Chisholm et al., 2017; Christenson, 2007; Cromer &

Clark, 2007; Gillenwater, 2012; Gutowski, 2017; Ilhan et al., 2021; King, 2012).

GNs facilitate a “transformation” of historical figures in the minds of students. The medium has the ability to highlight the historical figures’ personality, values and, and beliefs in a way that is out of reach when compared to traditional prose (Carano & Clabough, 2016; Clark, 2014). The emotional connection component offered by the GN is particularly important when teaching secondary-aged students.

Not only have GNs been used during the learning of content in social studies, but they have also been used as an assessment of learning. Gutowski (2017) described how they used GNs as an assessment after instruction on the Cleveland Trolley Strike of 1899 with high school students. He asserts that assessment in this way allows for students to communicate their understanding through both prose and art, giving more freedom to the student in their response. He found this medium was especially effective for students that were intimidated by writing. He notes that:

This assignment offers more complexity than writing an essay, the GN format also minimizes extensive writing as a barrier to communication. Students who find it difficult to articulate precisely or use proper grammar are able to communicate more elementally with drawings supplemented by enough dialogue and narration to tell the story effectively.

Christenson (2007) also advocates for the use of GNs in the high school social studies classroom, commenting on the GN already being a popular independent reading choice for teens. Christenson outlines and advocates for GNs on the topics of the war in Bosnia, the Middle East, current global conflicts, the Holocaust, and World War II. Although not among the list provided in the article, Christenson recommends GNs to aid in teaching other topics such as racism and social justice.

## **Productive Interactions with GNs**

Cromer and Clark (2007) proposed four considerations when supporting productive interactions with GNs based on the Eisner (1985) definition of “grammar” for decoding GNs. First, time is needed for students to fully engage with both the text and graphic. Processing and creating meaning from sequential art and text requires a period of acclimation for the reader. Teachers must remember that for many students, exposure to this type of medium is limited and could require a couple readings to become a fluent consumer. Second, intertextuality is a basic concept of the GN that students should be able to process. Intertextuality refers to the interplay between images and words and the recognition that one does not exist without the other in this medium. To have a productive interaction, the student must derive meaning from both modes of communication. Third, visual literacy refers to the understanding of the sequence of images used in GNs to convey a message. This skill requires a student to use closure (as defined previously) to create a complete meaning. Finally, hypertextuality refers to the cognitive acceptance of the text existing in several formats and locations in a GN. Many times, text in a GN will appear both above and below a character, in the shape of a circle, within a thought or speech bubble, within an arrow, or another non-traditional location. Consumers must demonstrate flexibility when encountering these types of texts within a GN to be a productive consumer.

## **Experimental Research in Using GN’s to Teach Social Studies**

The existing literature on using GNs to teach social studies concepts is largely either qualitative work or practitioner focus papers (referenced previously). Experimental studies evaluating the effectiveness of GNs used to teach social studies content are scant; however, two studies exist and both demonstrate positive outcomes in social studies content acquisition for students in sixth grade. The search for literature consisted of three steps. The first effort to identify studies was to search the following online databases: APA PsychInfo, EBSCO Academic Search Complete, Education Full Text, ERIC, and ProQuest Dissertations and Theses. Three concepts were considered when searching online databas-



es, see Table 1 for concepts and search terms used. Second, specific author names were searched. These names were recommended by a content expert to investigate as they may have published articles meeting the inclusion criteria. Finally, a forward ancestral search on all included studies was conducted to identify studies not captured by the first two search methods. Due to the limited number of experimental studies published on this topic, gray literature was also considered for inclusion. To be included for this analysis, studies had to meet the following eligibility criteria: (1) Measure at least 1 social studies related educational outcome, (2) participants were k-12 students, (3) GNs or a variation of GNs were the IV, and (4) the study design is a recognized experimental or quasi-experimental design. Notably, the range of years published was not considered during this review in an effort to capture all relevant studies.

**Table 1**

*Online Database Search Terms*

Concept Block 1	GNs OR comic book
Concept Block 2	social studies OR history OR geography OR economics OR civics
Concept Block 3	k-12 OR high school* OR middle school* OR elementary school*

The online database search yielded 170 studies (150 articles from APA PsychInfo, EBSCO Academic Search Complete, Education Full Text, ERIC; 20 articles from ProQuest Dissertations and Theses). After screening, two studies met inclusion criteria. Based on content expert recommendations, four studies were considered for inclusion however, none met inclusion criteria. Finally, after conducting a forward ancestral search, four additional studies were screened and considered for inclusion, but none met inclusion criteria. Both included studies employed a mixed methods design. Qualitative findings are also included.

Brugar et al. (2017) sought to explore the degree to which students are able to learn historical content in a language arts setting when reading a GN about historical events. The

authors developed detailed lesson plans for a unit of study that aligned with grade-level social studies content expectations (American Revolution). Before intervention, the team taught the students basic GN comprehension skills (i.e., attending to both written language and images, switching attention, and synthesizing information). The authors used a repeated measures approach to measure student knowledge before and after intervention (pre- and post-test). Participants included 16 sixth graders at a Title I school. The authors did not report gender or race/ethnicity data for their sample. The research team conducted this study in a classroom within the school, and the researcher served as the interventionist.

Brugar et al. (2017) used two measurement tools to evaluate student learning of the American Revolution. First, a “quick-write” task was administered before and after intervention. The sixth graders were given ten minutes to write “anything you know or think you know about the American revolution, which is sometimes called the Revolutionary war.” Additionally, students were given a vocabulary recognition task (VRT) pre- and post-intervention. The dependent variable measured by the VRT was “background knowledge”. The VRT consisted of 25 words the students were instructed to read and to circle the words associated with the Revolutionary War. Nineteen of the words were relevant to the Revolutionary War, and six were distractors.

Brugar et al. (2017) reported quick-write tasks significantly improved when comparing pre- and post-test scores (pre:  $Mdn = .23$ ,  $SD = .52$ ; post:  $Mdn = .71$ ,  $SD = .36$ ;  $p = <.05$ ). The median VRT post-test scores were also significantly higher than the pre-test (pre:  $Mdn = .53$ ,  $SD = .53$ ; post:  $Mdn = .88$ ,  $SD = .11$ ;  $p = <.01$ ). Both qualitative measures indicated improved student learning after exposure to GNs.

Commentary is presented about how students answered open-ended questions pre- and post-intervention and on a content assessment given only after intervention. For example, pre- and post-test examination of the “quick-write” activity revealed that post-intervention, students were not only able to write accurate information but provide much more detail in their responses. Students also showed evidence of using both the images and the

text in the GN to interpret meaning. Post-intervention, one student wrote “so the British [sic.] hired 8000 Hessians to fight with them.” The identification of “8000 Hessians” is information only found within the images in the GN, not the text. The content assessment consisted of multiple choice, open-ended, and chronological questions. Upon analysis of this assessment, authors concluded reading of GNs prompted content learning in some areas, but not all. For example, most students demonstrated a partial or full understanding of both American advantages (15[93%]) and disadvantages (12[75%]) in the revolution. Conversely, the students greatly struggled with organizing the sequence of American Revolution-related events in chronological order. No student in the sample was able to correctly sequence events on the assessment.

Ilhan et al. (2021) aimed to evaluate the effects of digital comics on students’ academic success, their views on distance education, and digital comics. The participants were 10 sixth-grade students (five female and five male). No race/ethnicity data was reported; however, the study was conducted in Turkey. The study was conducted virtually due to the recent COVID-19 pandemic. The team designed the instructional material (comics) themselves using an online cartooning program called Pixton. By creating the comics themselves, the authors were able to design the main character with an appearance and psychosocial characteristics that mimicked the student population. The authors were intentional about creating a character the students could relate to and they included situations and language the students were familiar with. Although the research team and the teacher worked together to create the instructional material, the teacher served as the interventionist.

The authors and the cooperating teacher developed an achievement test to measure the learning of social studies content after reading a digital comic on “management styles,” which was within the scope of the classes’ social studies curriculum. The achievement test was 15 items and was administered before intervention and after. Reliability estimates indicated excellent internal consistency ( $\alpha = .89$ ). Wilcoxon Sign-Rank Test was used to compare the pre-post test scores of the participants in the Ilhan et al. (2021) study. Results

indicate that on average, the post-test scores were significantly higher than pre-test (Medpretest = 8, Medposttest = 14.5;  $p < .05$ ).

Quantitative analysis was conducted with five of the participants (two lower achieving students, two higher achieving students, and one student demonstrating achievement in the average range). Semi-structured interviews were conducted over a video conferencing platform with each of the five participants. Regarding distance learning, students expressed opinions of frustration and dislike of the platform used. Comments about the comics being used for instruction were much more positive in nature. One student commented, “the comic book was much more fun and catchy. It widened our imagination (p.170)” Another stated, “Well, the characters being animated like this makes the course catchy, and the topic can be visualized in mind better. For example, it’s like something I watch in the movies or theater (p.169).” Students also expressed their desire for comics to be used in other subject areas too. Most comments from the interview expressed excitement and enthusiasm for using GNs. Another frequent remark was that the pictures helped the students visualize what was happening, which made it more interesting. One student also expressed their parents’ positive opinions, stating, “I explained this course to my family. They also liked it. We even looked at comic books appropriate for my age.”

### **Academic Instruction for Students with ESN**

Also referred to as students with moderate and severe disabilities, students with ESN require pervasive and on-going support to access instruction and may participate in their state’s Alternate Assessment based on Alternate Achievement Standards (Meier, 2020; Taub et al., 2017). Commonly, students with ESN are diagnosed with intellectual disability, multiple disabilities, physical disabilities, autism spectrum disorder, or a combination of diagnoses. to meet the unique learning needs of this population, many students with ESN spend most of their day in a special education classroom with or without routine opportunities to join their general education peers.

Before the early 2000’s, students with ESN received an education focused largely

on functional and independent living skills. During the 1980's instruction for students with ESN started to focus on the students' chronological age. This change created opportunities for students to learn skills focused on postsecondary daily living, including community-related skills and vocational skills. However, In the 1990's, educational emphasis for students with ESN evolved to include inclusion and self-determination. Most instruction during this time consisted of working with students on choice-making and goal-setting in addition to functional life skills. In the 1990's there was also increased effort to instruct students with ESN in the general education setting (Meier, 2020). Since the installment of No Child Left Behind ([NCLB], 2002), research evaluating academic instruction and outcomes for students with disabilities has increased. No Child Left Behind required states to create assessment systems and student learning standards to ensure all students had access to reading, math, and science curricula.

This mandate resulted in increased expectations and accountability of both students and teachers, which lead to a need for evidence-based instructional practices in teaching students with ESN grade-aligned academic content. Since the passing of NCLB (2002), general curriculum access has been explored by researchers to respond to this need (Kleinert et al., 2015; Olson, et al., 2016). Spooner and colleagues (2006) outlined what we know and need to know about general curriculum access. Although the field has advanced 17 years since this publication, many of these authors' assertions hold true. The research team outlined four well-documented supports that facilitate general curriculum access: *peer supports, self-determination, universal design for learning, and teaching and assessing content standards.*

First, the practice of peer supports typically involves same-age peers being taught to support their classmates with ESN by adapting class activities to encourage student participation, instruction on individualized education programs (IEPs), promote communication between the student with ESN and peers, provide feedback, and implement appropriate behavior intervention. Second, promoting self-determination can also be leveraged

to promote access to the general curriculum. Wehmeyer (2005) defined self-determination as “volitional actions that enable one to act as the primary causal agent in one's life and to maintain or improve one’s quality of life” (p.117). As it related to general curriculum access, many self-determination practices with students (e.g., setting academic goals, monitoring progress) can empower students to engage in self-directed learning. Research in this area suggest these practices can be instrumental in gaining general curriculum access for this population. Third, universal design for learning (UDL) is a pillar in effective instruction for students with ESN. Universal design for learning is designed to address the widely varying learning needs of students. The UDL framework consists of three principals: multiple means of representation, multiple means of expression, and multiple means of engagement (Levey, 2023; Meyer et al., 2014). Multiple means of representation is intended to provide diversity to how the students are exposed to lessons (e.g., text to speech of a reading, video, traditional reading of material). Multiple means of expression allows students to “show what they know” in more than one way (e.g., writing an answer, doing a presentation, acting it out). Multiple means of engagement considers how individual students engage with the lesson. For example, some students enjoy being called on in class while some students react negatively. Understanding what engages each student could also involve having an understanding of cultural background and norms for that student (Levey, 2023). Finally, Spooner et al. (2006) identify teaching and assessing of content standards as crucial for general curriculum access. Understanding the standards to be taught and training on instructional strategies can improve student scores on the state alternate assessment (Browder et al., 2005).

In addition to the above supports outlined by Spooner et al. (2006), systematic instructional practices are also effective across academic content areas and grade levels. Systematic instruction is a group of instructional practices that are based in applied behavior analysis (ABA) that have been found to be effective by a large body of research in teaching students with ESN (Collins, 2022).

There are numerous identified systematic instructional strategies, however, system of least prompts (SLP), constant time delay (CTD), and simultaneous prompting are among the most widely used procedures. These instructional procedures have been used to teach multiple English language arts (ELA) concepts such as text comprehension (Hudson et al., 2014; Mims et al., 2009) sight word recognition (Browder et al., 2009), vocabulary acquisition (Frates et al., 2022; Hua et al., 2013; Jameson et al., 2008), and writing (Pennington et al., 2014). In addition to the use of systematic instruction, Saunders and colleagues (2013) suggest incorporating graphic organizers and technology to teach Common Core ELA standards to students with ESN. Graphic organizers can be used to support comprehension by helping the student summarize text, sequencing, comparing and contrasting texts, organizing story elements (e.g., theme, main idea, setting), and identifying problems and solutions (Saunders et al., 2013; Schenning et al., 2013). The use of technology should also be considered when teaching ELA. Technology can be used to both supplement instruction (e.g., a viewing a video after instruction, a game on an iPad that relates to the lesson) or as a way to deliver instruction (e.g., text to speech feature to read aloud, use of a SMART board or other interactive screen). Technology can also be used to support communication during lessons (e.g., voice output devices, picture choices).

Systematic instructional procedures have been used to mathematics concepts such as the next-dollar strategy (Root et al., 2020a), word problem solving (Cox & Root, 2020; Saunders et al., 2018), subitizing (Jimenez & Saunders, 2019), early numeracy skills (Root et al., 2020b), measurement (Birkan, 2005). In addition to systematic instruction, Spooner and colleagues (2019) identified three evidence-based practices in teaching mathematical concepts: technology-aided instruction, graphic organizers, and manipulatives. Similar to the use of technology in ELA, students can engage with technology that can be used to supplement instruction, deliver instruction, and aid in communication; however mathematics lends itself to technology integration in novel ways such as calculator use and virtual manipulatives. Graphic organizers support students learning in mathematics. Differing from

ELA, mathematics graphic organizers are “diagrams that show the relative positions of the elements and their relationships to one another to help students conceptually understand and solve a problem” (Ives & Hoy, 2003). Common graphic organizers in mathematics include the use of a number line and grouping organizers that aid in addition and subtraction problems. Finally, manipulatives in mathematics are concrete or visual objects that can be used in understanding and solving mathematics problems (Bouck et al., 2014) and could include items like money, clocks, concrete counters (e.g., Unifix cubes, counting bears), or virtual manipulatives.

In an effort to better understand teaching ELA and mathematics to students with disabilities, research in teaching science and social studies has been overlooked (Scruggs et al., 2008). The literature exploring science and engineering practices for students with ESN is limited; however, researchers and educators are discovering ways to deliver meaningful science instruction (Jimenez et al., 2009). In addition to practices listed above (i.e., systematic instruction, using graphic organizers, integrating technology, peer-mediated interventions), new practices have emerged to support students with ESN. Jimenez (2022) encourages educators to place emphasis on *understanding* in addition to teaching scientific language (i.e., lesson vocabulary or site words), which involves actively participating in the steps of inquiry: engaging, investigating, describing, explaining, and reporting. For example, effective instruction in the inquiry process has been supported by the use of task analyses to investigate forces of motion and chemistry (Courtade et al., 2010) and Know-What to know- How- Learn (KWHL) Chart to explore kinetic energy. K-W-H-L CHART is a graphic organizer that tracks what a student knows (K), what a student wants to know (W), how a student will find the information, and what a student has learned (L) about a topic. It is used before, during, and after reading a text and/or conducting research. This strategy supports students’ comprehension by activating students’ background knowledge, setting a purpose for reading/researching, planning for how to find information, and tracking students’ knowledge about a topic (Jimenez et al., 2012).



## **Social Studies for Students with Extensive Support Needs**

Arguably, the purpose of the k-12 public schooling system is to produce civically competent graduates. According to the National Council for the Social Studies (NCSS, 2016), an excellent education in social studies is vital for students to grow into civically competent adults. At its essence, citizenship has been described as “the belief that all members are active participants in society” (Connors & Donnellan, 1993). Historically, individuals with disabilities have not experienced citizenship in the same way as their typical peers. Until 1952 individuals with disabilities were not permitted to receive an education (Brown vs. Board of Education, 1952) and only relatively recently received employment rights in 1990 (Americans with Disabilities Act, 1990). Until the passage of the No Child Left Behind (NCLB), 2002, students with an Individualized Education Program (IEP) were not required to participate in state testing. NCLB required states to develop assessment systems and standards to ensure all students had access to reading, math, and science general education curricula. Although this mandate resulted in increased expectations and accountability of teachers, it also promoted equity and opportunity for the students it served. At its inception, NCLB did not include social studies as an area to be assessed. Another consequence of the NCLB act was an increase in research on teaching academic skills to students with disabilities. However, not surprisingly, social studies instruction for students with disabilities remains the least researched academic content area (Zakas, 2011).

Despite the lack of emphasis on social studies instruction in special education research, its relevance and applicability to students with disabilities has not been completely ignored in academic literature. In fact, Vakil and colleagues (2010) suggest an interdependence among social studies content and special education. Both citizenship (including the rights and responsibilities of a citizen) and self-determination are outcomes special education teachers strive for their students, especially during transition planning. Field et al. (1998) defined self-determination as:

A combination of skills, knowledge, and beliefs that enable a person to engage in goal-oriented, self-regulated, autonomous behavior. An understanding of one's strengths and limitations, together with a belief of oneself as capable and effective are essential to self-determination. When acting on the basis of these skills and attitudes, individuals have greater ability to take control of their lives and assume the role of successful adults in our society (p. 9).

It is well documented that students with disabilities that are self-determined experience better post-secondary outcomes (Lee et al., 2008; Powers et al., 2012; Ward, 2005; Wehmeyer & Palmer, 2003; Wehmeyer & Schwartz, 1997). Wehmeyer and Palmer (2003) found that individuals with cognitive disabilities that scored high on the *Arc's Self-Determination Scale* (Wehmeyer & Kelchner, 1995) also demonstrated greater competency on variables related to independence (i.e., living independently, maintaining a bank account, holding a job) post-graduation from high school. Additionally, Ward (2006) found that students with disabilities who are self-determined are more assertive than students who are not. In addition to greater independence and advocacy, in 2008, Lee et al. examined the relationship between self-determination and academic achievement of students with disabilities. Their findings included promising evidence of a relationship between self-determination and access to the general curriculum. Specifically, self-determination was found to be a strong predictor of increased academic responding (Lee et al., 2008).

Promoting and prioritizing self-determination in the classroom can lead to students with disabilities becoming advocates for themselves and empowering them to participate in the community and our democratic system. Such participation in society would also demonstrate a level of citizenship. If these concepts are taught appropriately and reinforced throughout a student's k-12 experience, increased participation in society post-high school could be a result (Lawson, 2003).

Despite the recognized importance of skills within social studies curricula (i.e., citizenship, self-determination, etc.), in practice, special educators have continued to place

little emphasis on the content. Lintner and Schweder (2008) investigated the perceptions of special education teachers about social studies instruction. Survey respondents (teachers) were asked to rank subject areas on a scale from most important to least important. First, the respondents were asked to rank the subjects based on the school's commitment to the education of each subject area. Next, they were asked to reflect on and rank their own commitment to teaching each subject area. Social studies was identified as the least important subject for both questions. When asked how prepared they felt their students were for the social studies curriculum of the next grade level, most teachers (61%) reported they felt their students were either "poorly prepared" or "unprepared". Following the survey, the researchers conducted follow-up interviews with respondents. When asked to comment on their perceived lack of importance of social studies instruction, most respondents' answers had to do more with why reading and math content should take priority and less about social studies being unimportant. In fact, one teacher stated:

To be honest, if I had my choice, I would only be teaching my kids reading, math, and language arts. By teaching my kids social studies and science- and on grade level- I really don't know what my kids can do, what they can understand and process.

Respondents also commented on barriers and the lack of progress they observe in their students regarding social studies. One teacher stated, "The [social studies] standards just aren't working for my kids. It's wonderful to see my kids light up and say 'I'm learning this.' But they aren't saying this about social studies" and another stated, "I just can't see that progress in social studies. I know that my students will come back next year with absolutely no recollection of social studies." A couple teachers made comments about social studies content being "over their heads," specifically, one teacher stated, "teaching these [social studies] standards, which are so far above the heads of my students, completely defeats the purpose of what special education is all about." Finally, teachers described the lack of materials and instructional time as the biggest barriers to social studies instruction

in their classrooms.

Identifying barriers to social studies instruction in special education is a natural next step in addressing the issues described above, and ultimately improving the quality of instruction. Expanding the research in this area is not only necessary to improving social studies academic content acquisition but is also likely to facilitate greater independence for students after school— and by extension, improve their quality of life. The first step in responding to this call for further research in teaching social studies content to students with disabilities, is to examine the existing experimental research to identify patterns and gaps in the literature. In an effort to synthesize existing literature, a systematic review was conducted.

### ***Review of Literature***

The search for literature consisted of three steps. The first effort to identify studies was to search the following online databases: *APA PsychInfo*, *EBSCO Academic Search Complete*, *Education Full Text*, *ERIC*, and *ProQuest Dissertations and Theses*. Two concepts were considered when searching online databases (concept 1: “social studies”; concept 2: intellectual disability\* OR autism). Concept 1 was designed to capture studies that involved social studies and concept two was meant to capture studies with participants that have intellectual disabilities (including variations of the word *disability*) or autism. Second, specific author names were searched. These names were recommended by experts in the field to investigate as they may have published articles meeting the inclusion criteria. Finally, a forward ancestral search on all included studies was conducted to identify studies not captured by the first two search methods. Gray literature was also considered for inclusion as the topic is not a heavily researched area. Inclusion criteria was intentionally designed to be broad in an effort to capture all relevant work. To be included for this analysis, studies had to meet the following eligibility criteria: (1), the study is an intervention that includes social studies instructional materials, (2) participants (at least 1) are identified as having an intellectual disability or autism, (3) participants were k-12 students, and (4) the study design is a recognized experimental or quasi-experimental design. Notably, the

range of years published was not considered during this review in an effort to capture all relevant studies.

The search of the databases identified above, yielded 1,927 articles total (1,767 from *ProQuest Dissertations and Theses*; 160 from *APA PsychInfo*, *EBSCO Academic Search Complete*, *Education Full Text*, and *ERIC*. After screening, all but 182 articles were deemed irrelevant and excluded from consideration. After applying inclusion criteria to the remaining 182 studies, only seven were eligible for review. An ancestral search was then conducted on each of the four included studies. This search resulted in five additional articles. In total, 11 studies were identified for review.

In total, 32 students participated in the included studies. Four students (13%) were in high school (grades 9-12), 16 (50%) students were in middle school (grades 6-8), and 12 (37%) students were in elementary school (grades k-5). Nineteen (68%) participants were male and nine (32%) were female. One study (Ciullo et al., 2015) with four participants did not specify the gender, leaving the gender of 13% of all participants unidentified. Much of the data regarding diagnosis appears to overlap. For example, several students were described as having Intellectual disability, but also described later in the study as having Down syndrome. The term “intellectual disability” encompasses many diagnoses, therefore the number of students with specific diagnoses (e.g., Down syndrome, autism, etc.) might be underrepresented in this data. The most common reported participant diagnosis was autism ( $n = 17$ , 53%). The diagnosis of intellectual disability was also a commonly reported diagnosis ( $n = 11$ , 34%; of these participants, 6 [55%] were identified as having moderate intellectual disability). Four (13%) students were diagnosed with Down syndrome, one traumatic brain injury (TBI; 3%), and one other health impairment (OHI; 3%). Two studies (Ryan et al., 2019; Ryan, 2021) took place in different locations during different conditions of the design. When analyzing the study setting, only the location of intervention phases will be considered. Most of the studies were implemented in a one-on-one format ( $n = 7$ , 64%) in a special education classroom or a room down the hall close to the

classroom. Three studies (27%) took place in the general education classroom. Only one study (Ciullo et al., 2015) was conducted in a small group (four students) format.

Researchers, teachers, paraprofessionals, peers, and doctoral students all served as implementers of the included studies. In five studies ([45%] Ciullo et al., 2015; Dugan et al., 1995; Schenning et al., 2013; Wood et al., 2015; Zakas et al., 2013), teachers implemented the intervention. In three studies ([27%] Courtade et al., 2017; McKissick et al., 2013; Mims et al., 2012), doctoral students served as the interventionist. In two studies ([18%] Britts, 2015; Schenning et al., 2013), a researcher served as the interventionist. In one study ([9%] Ryan et al., 2019), a paraprofessional was the interventionist. In one study ([9%] Ryan, 2021), peers served as the implementers. See Table 2 for a summary of all included studies.

**Table 2**

*Summary of all included studies*

Study	Design	Grade Levels/ Ages	Diagnoses	Independent Variables/ Implementors	Dependent Variables	Instrumentation/ Procedures	Data Analysis	Setting	Social Studies Discipline Addressed
Britts, 2015*	MB AP	4- high school	2- Down Syndrome; 1- ID; 1- ASD	direct instruction on story-grammar concepts, guided practice on the steps for completing the computer based graphic organizer, guided practice on the steps for using the Computer Based Graphic Organizer	(1) Task completion, (2) total independent story-statements, (c) guided story-statements	(1) Baseline, (2) pre-intervention training and independent practice with feedback, (3) computer-based graphic organizer use, (4) generalization, (5) social validity (students and special ed teacher)	Visual analysis and descriptive analysis	one on one in classroom	History (Native Americans, English Colonies and the American Revolution, to the Modern Civil Rights Movement and the Space Race.)
Ciullo et al., 2015	MP AP	1- elementary	1- ID	Computer-Based Concept Mapping Organizer	(1) Percent correct on quiz after readings	(1) Explicit instruction on computer program, (2) baseline, (3) computer-based Concept Mapping, (4) fidelity of implementation (20% of sessions), (5) social validity for teachers and students	visual analysis	small group in special education classroom	not specified
Courtade et al., 2017	MP AP	3- elementary	3- Moderate ID (1- TBI, 2-Down Syndrome)	Read alouds, system of least prompts, and graphic organizers	Number of independent correct responses to comprehension questions	(1) Baseline, (2) Intervention, (3) Maintenance, (4) Reliability and Fidelity, and (5) social validity (teachers)	visual analysis	one on one in room down the hall from self-contained room	Civics (branches of government)

**Table 2 (cont.)**

*Summary of all included studies*

Study	Design	Grade Levels/ Ages	Diagnoses	Independent Variables/ Implementors	Dependent Variables	Instrumentation/ Procedures	Data Analysis	Setting	Social Studies Discipline Addressed
Dugan et al., 1995	Reversal (ABAB)	2- elementary	2- ASD	Cooperative learning groups intervention	(1) Weekly pretests and posttests on social studies curriculum, (2) academic engagement, (3) Interactions with peers	(1) Baseline, (2) intervention, (3) second baseline, (4) second intervention, and (5) social validity (teachers and paraprofessionals)	visual analysis, survey analysis	general classroom	Geography (landforms)
McKisick et al., 2013	MP AP	2- elementary	3- ASD	Computer Assisted Instruction package	Number of correct responses made during probe sessions	(1) pre-baseline probes, (2) baseline probes, (3) CAI Intervention package, (4) CAI Intervention package with pre-training and textual support, (5) Maintenance and generalization, (6) social validity (students and teachers)	visual analysis	baseline and intervention were one on one in self-contained room	Geography (Map reading)
Mims et al., 2012	MP AP	4- middle school	4- ASD	Modified system of least prompts, read alouds of adapted grade-level biographies, and graphic organizer	Number of correct unprompted responses to text-dependent listening comprehension questions	(1) Baseline, (2) intervention, (3) massed-trial training, (4) maintenance, and (5) generalization, (6) social validity (teacher)	visual analysis	multi purpose room next to the self-contained room. one on one	History (Biographies)



**Table 2 (cont.)**

*Summary of all included studies*

Study	Design	Grade Levels/ Ages	Diagnoses	Independent Variables/ Implementors	Dependent Variables	Instrumentation/ Procedures	Data Analysis	Setting	Social Studies Discipline Addressed
Ryan et al., 2019	MP AP	3- middle school	1- ASD; 1- ID; 1- OHI	Inquiry-based instruction with graphic organizer	(1) percent of concept statements answered correctly, (2) accuracy of paraprofessionals' use of instructional intervention, (3) social validity measure	(1) paraprofessional training, (2) Baseline, (3) instructional phases, (4) instructional probes, (5) generalization, (6) maintenance, (7) social validity (gen ed teacher and paraprofessionals)	visual analysis, survey analysis	intervention and generalization-education classroom. Probes conducted in self-contained class one on one	History (US History)
Ryan, 2021*	MP AP	3- middle school	3- ID	Inquiry-based instruction with graphic organizer	(1) percent correct responses, (2) social validity measure	(1) peer and paraprofessional training, (2) Baseline, (3) instructional phases, (4) generalization, (5) maintenance, (6) social validity (gen ed teacher and paraprofessionals)	visual analysis, survey analysis	baseline, acquisition, and generalization were one on one in self-contained class. Intervention was in the general education class.	History and Geography

**Table 2 (cont.)**

*Summary of all included studies*

Study	Design	Grade Levels/ Ages	Diagnoses	Independent Variables/ Implementors	Dependent Variables	Instrumentation/ Procedures	Data Analysis	Setting	Social Studies Discipline Addressed
Schenning et al., 2013	MP AP	3- middle school	3- ASD	structured inquiry and graphic organizers	(1) percent correct on the 7-step inquiry procedure, (2) generalization measure	(1) Baseline, (2) pre-teach vocabulary and definitions, (3) intervention, (4) assessment probe, (5) maintenance, (6) generalization, (7) social validity (student, parent, paraprofessional)	visual analysis, survey analysis	one on one in self-contained classroom	History
Wood et al., 2015	MP AP	3- elementary	3- Moderate ID	systematic instruction and graphic organizer	(1) number of points earned generating and answering questions from teacher procedures TA, (2) number of comprehension questions asked in the gen ed classroom, (3) number of comprehension questions answered during generalization probes in gen ed classroom.	(1) Baseline, (2) teacher training, (3) intervention, (4) maintenance, (5) generalization, (6) social validity measure (student, special ed, gen ed)	visual analysis, survey analysis	one on one in class	History

All studies employed a single case design, however the majority of studies ( $n = 9$ ; 82%) employed a multiple probe across participants design. One study ([9%] Britts, 2015) used a multiple baseline across participants and one ([9%] Dugan et al., 1995) study used a reversal design. All procedures in the studies using a multiple probe design included conditions and probes that are characteristic of the design (i.e., baseline [A condition], intervention [B condition], generalization and/or maintenance, staggered intervention conditions). Outside of the standard design characteristics, several studies ( $n = 7$ ) using multiple probe across participants design also included training sessions as part of their procedures (Ciullo et al., 2015; McKissick et al., 2013; Ryan et al., 2019; Ryan, 2021; Schenning et al., 2013; Wood et al., 2015; Zakas et al., 2013). Pre-intervention trainings included pre-teaching skills to participants (Ciullo et al., 2015; McKissick et al., 2013; Schenning et al., 2013; Zakas et al., 2013), training paraprofessionals to implement the intervention (Ryan et al., 2019) or to supervise peers in implementing the intervention (Ryan, 2021), teaching trainings (Wood et al., 2015), and peer trainings (Ryan et al., 2019). Eight of the studies using a multiple probe across participants design included a measure of social validity (Ciullo et al., 2015; Courtade et al., 2017; McKissick et al., 2013; Mims et al., 2012; Ryan et al., 2019; Ryan, 2021; Schenning et al., 2013; Wood et al., 2015). Most of these studies with a social validity measure included perceptions of the cooperating special education teachers (Ciullo et al., 2015; Courtade et al., 2017; McKissick et al., 2013; Mims et al., 2012; Wood et al., 2015). Some studies measured the perceptions of the cooperating gen ed teachers (Ryan et al., 2019; Ryan, 2021; Wood et al., 2015), while others focused on student perceptions (Ciullo et al., 2015; McKissick et al., 2013; Schenning et al., 2013; Wood et al., 2015). One study also captured parent perceptions of the intervention (Schenning et al., 2013).

Two studies did not employ a multiple probe across participants design. One study (Britts, 2015) used a multiple baseline across participants design to demonstrate experimental control and one study used a reversal design (Dugan et al., 1995). Britts, 2015 also

involved student training and on the computer software used for intervention and a social validity measure of both special education teacher and student perception of the intervention. Dugan and colleagues (1995) also provided training by reviewing and practicing the intervention with student peers and collected social validity data on the perceptions of general education teachers and paraprofessionals.

As noted above, the majority of included studies used a multiple probe across participants design. This design is usual for demonstrating a functional relation of the independent variable and the dependent variable(s) when the behavior of interest is non-reversible. A non-reversible behavior is one that is not likely to return to baseline after the intervention is removed (Ledford & Gast, 2014). Academic skills are considered non-reversible and commonly measured using this design. Multiple probe across participants designs involve assessing multiple A-B (baseline-intervention) comparisons by introducing condition changes at different points in time with three or more target participants. Multiple probe designs are useful when continuous measurement of baseline through all tiers (in this case, participants) is unnecessary or not feasible.

A reversal design (ABAB) was used by Dugan and colleagues (1995) to demonstrate a functional relation. This design allows for a very clear demonstration of effect by simply comparing adjacent baseline and intervention conditions. Reversal designs allow for three potential demonstrations of effect (i.e., A<sub>1</sub>-B<sub>1</sub>, B<sub>1</sub>-A<sub>2</sub>, A<sub>2</sub>-B<sub>2</sub>). These comparisons increase confidence that the change in behavior is due to the manipulation of the intervention and not an outside influence (Ledford & Gast, 2014). Reversal designs are typically used when the behavior of interest is considered reversible. A reversible behavior is one that is likely to revert back to baseline level when the intervention is removed. Dugan et al. (1995) analyzed academic engagement, peer interaction, and social and behavioral skills using this design and academic achievement using a pre- and post- test.

A multiple baseline across participants design was used by Britts, 2015 to analyze the effectiveness of systematic instruction on task completion, total independent sto-

ry statements, and guided story statements. Like the reversal design, a multiple baseline across participants design is suitable for behaviors that are reversible in nature. Similar to the multiple probe across participants design, a multiple baseline across participants design also involves staggering the introduction of the intervention. Baseline data is collected concurrently for all participants during a multiple baseline across participants design and intervention begins when data is stable in all tiers.

Interventions varied greatly among the included studies, however most ( $n = 9$ , 82%) studies used some form of graphic organizer (Britts, 2015; Ciullo et al., 2015; Courtade et al., 2017; Mims et al., 2012; Ryan et al., 2019; Ryan, 2021; Schenning et al., 2013; Wood et al., 2015; Zakas et al., 2013) as an independent variable. Of the graphic organizers used in these studies, two (22%) were computer-based (Britts, 2015; Ciullo et al., 2015). Britts (2015) used a modified graphic organizer from a study conducted by Zakas (2011). The organizer contained story grammar elements (i.e., event, location, time, people, first detail, second detail, third detail, outcome) to organize information presented in the text. The graphic organizer was displayed using a device and the Read: OutLoud 6 software. With this software, students were able to copy and paste information from the text directly into the graphic organizer. The modified graphic organizer adapted from Zakas (2011) was also used in the included study also by Zakas (Zakas et al., 2013). Ciullo et al. (2015) used computer-based concept mapping to increase student comprehension of both social studies text and science texts. The graphic organizers were accessed using the Kidspiration software downloaded on a tablet. All other studies using graphic organizers (Courtade et al., 2017; Mims et al., 2012; Ryan et al., 2019; Ryan, 2021; Schenning et al., 2013; Wood et al., 2015; Zakas et al., 2013) were physical, tangible organizers the students could manipulate with their hands. Of these studies, the most common graphic organizers were WH question references sheet for students (Courtade et al., 2017; Mims et al., 2012; Wood et al., 2015) and organizers to assist students with question generation (Ryan et al., 2019; Ryan, 2021; Wood et al., 2015). Two studies included graphic organizers that included basic text orga-

nization elements (Schenning et al., 2013; Zakas et al., 2013). One study included a graphic organizer to assist students with sequencing events of a story or text (Mims et al., 2012). Intervention elements that were paired with the graphic organizers were direct or systematic instruction (Britts, 2015; Ciullo et al., 2015; Courtade et al., 2017; Mims et al., 2012; Wood et al., 2015; Zakas et al., 2013), read-alouds (Britts, 2015; Courtade et al., 2017; Mims et al., 2012; Schenning et al., 2013; Wood et al., 2015), structured inquiry instruction (Ryan et al., 2019; Ryan, 2021; Schenning et al., 2013).

Two studies did not include a graphic organizer in the intervention (Dugan et al., 1995; McKissick et al., 2013). Dugan and colleagues (1995) used cooperative learning groups with same age peers to investigate the groups' effect on acquisition of social studies content and social interactions of students with autism. McKissick and colleagues (2013) used computer-assisted systematic instruction to teach students with autism map reading skills.

The primary data analysis method for all included studies was visual analysis. Visual analysis is used in single case designs to not analyze data after the completion of a study, but also to inform decisions (e.g., introduce a new condition) made during intervention. During visual analysis of data within conditions, changes in level, trend, and variability are analyzed. Visual analysis between conditions is intended to detect evidence of a functional relation between the independent variable and dependent variable (Ledford & Gast, 2014). Additionally, confidence in a functional relation can be enhanced through replications of effect. Although all data in the included studies were analyzed in this manner, all studies except one also included a social validity measure that was analyzed separately (Zakas et al., 2013).

**Major Findings.** This investigation sought to examine the existing literature on teaching students with intellectual disability and autism social studies content. Through this analysis, several major findings surfaced. The first major finding of this review was the utility of the multiple probe across participants design.

Nine studies (82%) used this design to demonstrate a functional relationship be-

tween the independent variable and dependent variable. As stated previously, this design is ideal for evaluating interventions on non-reversible behaviors due to the reliance on inter-subject replication. The intermittent probes associated with this design greatly decrease the threat of history as the students' exposure to assessment probes and study-related materials is limited. This is one advantage of using a multiple probe design over a multiple baseline design when working with academic interventions. A multiple baseline design permits continuous exposure to materials and probes during baseline conditions. This becomes particularly problematic when considering students in the lower tiers (i.e., the students that are exposed to intervention conditions last) due to the potential of lengthy baseline sessions. A multiple baseline design doesn't permit introducing intervention until participants in the previous tier demonstrate a stable pattern of responding during intervention. Although the multiple probe across participants design has advantages for evaluating a functional relation between dependent variables and the intervention, limitations of the design should be considered as well. First, the lack of intra-participant replication decreases internal validity. This design typically only allows for one or two demonstrations of effect. Typically, three demonstrations of effect is accepted by single case design researchers to demonstrate experimental control, however this can be strengthened by the inter-participant replication that is characteristic of the design. Another limitation is an increased likelihood of inconsistent effects. Due to the relatively small number of participants typically included, if experimental control isn't demonstrated with one participant the internal validity of the entire study could be compromised. That said, it's important to recognize that all designs have limitations and not everything can be controlled for. Applied research is inherently difficult to conduct due to an exponential number of variables that are outside of the research team's control.

Another major finding was the use of graphic organizers as part of the interventions. Most interventions ( $n = 9, 82\%$ ) included some form of graphic organizer (i.e., tangible or electronic). Graphic organizers have been described as “visual and spatial displays that make relationships between related facts and concepts more apparent” (Kim et

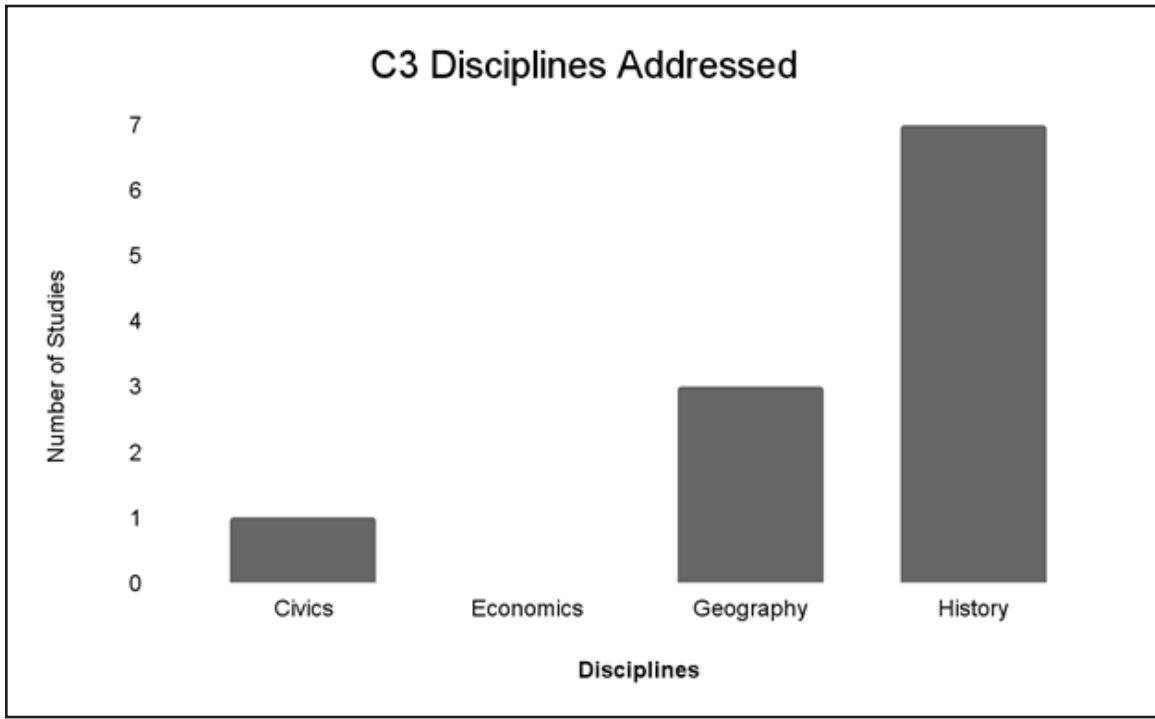
al., 2004). Their purpose is to aid in meaning-making by presenting abstract concepts as something more concrete and visually demonstrating how ideas are connected. Dexter and Hughes (2011) conducted a meta-analysis of the use of graphic organizers for students with learning disability and found that compared other instructional activities (i.e., listening to lectures, reading passages), graphic organizers were more effective in content learning on posttests, maintenance, and transfer measures. It isn't surprising graphic organizers were the sole (Ciullo et al., 2015) independent variable or a component (Britts, 2015; Courtade et al., 2017; Mims et al., 2012; Ryan et al., 2019; Ryan, 2021; Schenning et al., 2013; Wood et al., 2015; Zakas et al., 2013) of an intervention of most of the reviewed studies. Graphic organizers not only provide visual supports (which is a well-researched support in itself), but also have structural flexibility. Watson and colleagues (2012) recognized multiple graphic organizer formats including but not limited to concept maps, semantic maps, semantic feature analysis, visual displays, advanced organizers, and Venn diagrams.

**Gaps in the Literature.** As stated earlier, intervention research on teaching social studies content to students with disabilities is scant. Therefore, many gaps in the current literature exist. First, social studies topics that were addressed were imbalanced across studies. Four Core Disciplines are recognized by the College, Career, and Civil Life (C3) Framework for Social Studies State Standards: (1) civics, (2) economics, (3) geography, (4) and history. Of the studies reviewed, history was the most common discipline taught to students ( $n = 7$ ; Britts, 2015; Mims et al., 2012; Ryan et al., 2019; Ryan, 2021; Schenning et al., 2013; Wood et al., 2015; Zakas et al., 2013) followed by geography ( $n = 3$ ; Dugan et al., 1995; McKissick et al., 2013; Ryan, 2021) and civics ( $n = 1$ ; Courtade et al., 2017). No studies evaluated learning of economics related content (see Figure 3). Future research should investigate interventions on the learning of both economics and civics content. Another means of extending research on social studies interventions would be to replicate the few studies that have been conducted.



**Figure 3**

*C3 Disciplines Addressed in Included Studies*



Lastly, only one study was conducted with students in high school (Britts, 2015). Although there was likely a review process in place, it's possible a standard peer review process wasn't conducted. This study also investigated student learning within the history discipline of the C3 framework. Topics such as civics and economics become increasingly relevant as students progress towards transitioning into adulthood. This is true for all students, but as increased independence, self-determination, and self-advocacy are shared goals for secondary students with disabilities, it could be argued that this type of social studies content is equally, if not more, relevant for this population of students. Because of this, there is a great need for more research in the areas of civics and economics for students with disabilities.

The current study aims to evaluate the efficacy of GN's to teach social studies to students with ESN. Further, this study addresses the gaps in literature mentioned above by (a) evaluating content acquisition of economics content and (b) including students with

ESN that are in high school. To date, the current study is the first to both evaluate GNs to teach students with ESN and to investigate economics content acquisition for students with ESN.

## CHAPTER THREE

### METHOD

Literature outlined in Chapter Two not only demonstrates the need for further research in the area of social studies acquisition for students with ESN, but also describes practices (both conventional and unconventional) to consider to support student learning. This chapter outlines the research methods used to investigate the effectiveness of two interventions designed to increase economics content acquisition for high school-aged students with ESN. Additionally, this chapter outlines measures of student engagement in economics lessons as well as social validity. This section contains the following components: (a) permissions to conduct research, (b) participants, (c) setting, (d) experimental design, (e) procedures, (f) materials, (g) dependent variables, (h) measurement, (i) procedures, (j) fidelity and interobserver agreement, (k) social validity, and (l) data analysis.

The purpose of this study was to compare student outcomes (i.e., social studies content acquisition and student engagement) when using graphic novels (GN) or traditional adapted informational text (TAIT) with high school students with ESN. Additionally, social validity of the intervention was also evaluated. Specifically, the researcher sought to answer the following research questions:

5. Is there a difference in economics content acquisition for high school students with ESN when instruction is delivered using educational GNs or TAIT?
6. For high school students with ESN, is there a difference between student engagement levels when instruction is delivered using educational graphic novels or TAIT?

7. What are students' perceptions of the use of and the effects of graphic novels to teach social studies content?
8. What are teachers' perceptions of the use of and the effects of graphic novels to learn social studies content?

## **Participants**

### ***Students***

Four students were recruited to participate in this study. The researcher asked the special education teacher(s) to nominate students that fit the following inclusion criteria: (1) receiving special education services under the category of Functional Mental Disability (FMD) in Kentucky, (2) able to consistently answer questions through verbally stating an answer, touching an answer choice, or eye gazing to an answer choice, (3) currently enrolled at a high school, (4) consistent attendance (misses no more than three days of school a month). Students were excluded from the study if their vision and or hearing was not corrected (e.g., with glasses, hearing aids) or if they were English Language Learners. A recruitment and consent letter will be sent home with nominated students. When interest in participation is expressed from parents/caregivers of the students, a meeting will be set up with the students and their families to further explain the study purpose as well as to obtain consent or assent from participants and parents/caregivers.

Student 1 was a 16-year-old White male student in the 10th grade. According to his Individualized Education Program (IEP) he was eligible for special education service under the category of Function Mental Disability (FMD). He was a verbal communicator and could clearly express his wants and needs. Student 1 was able to follow one and two-step instructions and request help from teachers or classroom staff when needed. He was very social and enjoyed working in groups with his peers. Student 1 was able to write and type with some independence but occasionally required visual prompting and modeling to complete writing tasks. Teachers report that reading material that is repetitive in na-

ture greatly supports his listening comprehension. He was able to read basic sight words independently, but greatly benefitted from picture support during reading tasks. In math, Student 1 was able to calculate basic addition and subtraction problems with the use of a calculator. Student 1 excels when he has a highly structured classroom environment and visual schedule to anticipate activities throughout the school day. To access instruction, he sometimes requires visual supports, a slant board to assist with positioning of materials, sensory supports (e.g., fidgets, rocking chair), and frequent breaks. He spends about 15% of the school day in the general education classroom.

Student 2 was a 16-year-old White male student in the 10th grade. According to his IEP, his area of eligibility was Orthopedic Impairment (Cerebral Palsy) and FMD. Although he was a verbal communicator, he was very difficult to understand at first. Once he got comfortable and I was more familiar with his speech, he was very social.

Student 2's primary mode of communication was verbal, but he recently started using a device that would listen to his speech as he spoke and essentially translate his unique speech so he would be more easily understood. Student 2 enjoyed reading and could recognize basic words at the pre-k to kindergarten level. He also enjoyed reading along with someone (e.g., repeating the words being read by an adult or peer). He understood basic writing mechanics such as using a capital letter and punctuation. In math, he could recognize numbers 1-100 and could recognize money, but was inconsistent when identifying values of coins. To access instruction, Student 2 required visual supports in all areas, frequent breaks, and prompting (usually verbal). He spent about 15% of the school day in the general education classroom. Student 2 enjoyed talking about rap music, cars, and basketball.

Student 3 was a 21-year-old White male student in grade 14. He was eligible for special education services under the area of FMD. Student 3 was very pleasant, but usually his energy level was low.

He communicated using gestures with some short words (one syllable words). Oc-

asionally, he would use basic sign language. He did have an augmentative and alternative communication (AAC) device; however, the teacher and classroom staff report little success in Student 3 using it consistently to communicate. He could follow one-step directions of familiar tasks but required additional support to complete 2-step tasks or tasks that were not routine. He could recognize numbers 1-10 and sort items based on similar attributes. Teachers reported he required picture supports for all academic tasks and required answer choices to be cut out and separated to more easily discriminate between choices. To access instruction, Student 3 required a highly structured classroom environment, pictures supports, adapted writing materials, visual schedule, adult or peer proximity, and sensory supports (e.g., sensory chews, fidgets, swing). Student 3 enjoys sports, Disney movies, and animals.

Student 4 was an 18-year-old White male student in the 12th grade. According to his IEP, his area of eligibility was FMD. Student 4 was a very social student and enjoyed talking and joking with his classmates and teachers.

He clearly communicated his wants and needs verbally and would request help with tasks when needed. He could follow both simple one-step and multi-step directions with minimal support. Student 4 was considered an independent reader by his teacher at the 2nd grade level but was working toward fluency in 3rd level grade texts. He was also considered an independent writer with and without technology. Student 4 had a foundational understanding of addition and subtraction but could compute simple equations of all operations (i.e., addition, subtraction, multiplication, and division) using a calculator. He spent about 15% of the school day in the general education classroom. Student 4 enjoys talking about cars, video games, basketball, and music. At the time of this study, Student 4 was looking forward to graduation and beginning working toward auto-detailing and fork-lift operation after graduation. See Table 3 for student characteristics.

**Table 3**

*Participant Characteristics*

<b>Student</b>	<b>Age</b>	<b>Grade</b>	<b>Race/Ethnicity</b>	<b>Eligibility Category</b>
Student 1	15	10	White	FMD
Student 2	16	10	White	OI/FMD
Student 3	20	14	White	FMD
Student 4	18	12	White	FMD

Note. FMD = Functional Mental Disability; OI = Orthopedic Impairment

**Interventionist**

The researcher, doctoral candidate in Curriculum and Instruction in the College of Education and Human Development at the University of Louisville, conducted all instruction and collected all primary data. The researcher, a White female, had three years of experience as a teacher of students with ESN in a middle school and elementary school setting. The secondary data collector was a first-year doctoral student in the same doctoral program as the researcher. The secondary data collector was trained by the researcher in gathering both procedural fidelity data and interobserver agreement (IOA) data. The training began by the researcher and the doctoral student coding two lessons together for both IOA and fidelity. During these sessions, discussion about the coding procedures and questions were encouraged. After answering questions and working through the coding together, the researcher and doctoral student coded two more lessons independently. The coding for these lessons were then compared for agreement. When 100% agreement was met for two lessons for both IOA and fidelity, the doctoral student was permitted to continue the coding independently for the remainder of the lessons.

**Setting**

The study took place in a public high school in a Midwestern state. The school

district was made up of 25 schools and served just under 13,000 students. The high school where the study took place served 1,102 students in 9th-12th grade with 48% of students qualifying for free and reduced lunch. The racial makeup of the school was 88% White, 7% Hispanic, 3% two or more races, 1% Black, and 1% Asian. The average student-teacher ratio was 18:1.

There were two FMD teachers and two classrooms that were adjacent to each other and joined by a shared door. Although each teacher had their own classroom, at the time of the study, they were co-teaching and primarily used one of the classrooms for the bulk of their instruction. All sessions of the study (i.e., pre teaching and intervention) were conducted in the empty classroom. The shared door between the two classrooms was left open or cracked to ensure the students and myself had access to the classroom teachers if needed. There were two larger, triangular desks that were pushed together to make a square where all sessions were conducted. I was positioned to the left of each student sitting in a chair for all sessions for all students except Student 2. For this student, I stood in front of the student in order to bring the materials closer to him by setting them on the student's tray on his wheelchair. The table where sessions were conducted was clutter free and materials for each lesson were put on the table only when they were needed. All but 3 sessions were conducted with only the student and the researcher in the room. A paraprofessional joined the first session with Student 2 to ensure I could understand the student's speech. The same paraprofessional accompanied Student 3 during the first 2 sessions as this was a preferred person, and the student wasn't used to me yet. An iPhone was set up in a small tripod for each session to record.

### **Experimental Design**

Single case research design (SCRD) is a quantitative design approach in which the participants serve as their own control. Most SCRDs employ a baseline condition to establish a basis of comparison when determining whether a functional relationship exists between the independent variable and dependent variable. In SCRDs a functional relation is



demonstrated when a dependent variable (behavior) is causally related to the introduction of an independent variable (intervention; Gast & Ledford, 2018). The purpose of SCRDS is to determine if behavior change occurs when an intervention is introduced. A clear replication of effect is also needed to demonstrate experimental control in a single case study. This is a standard requirement among all SCRDS; however, the process of demonstrating replication of effect varies among the different designs. Unlike other quantitative research methods, determining if a functional relationship exists relies on visual analysis of graphical data. Visual analysis involves visually examining the level, trend, and variability of data patterns (Gast & Ledford, 2018).

The current study employed a single case, alternating treatments design (ATD) with random alternation to examine the effectiveness of two interventions designed to increase economics content acquisition for high school-aged students with ESN. This design is well-suited in comparing interventions that target nonreversible behaviors. Traditionally, the ATD is described as having four phases: baseline, comparison of independent variables, superior treatment alone, and follow-up (Barlow & Hayes, 1979). However, due to its versatility, Wolery et al. (2018) offered several variations of the ATD. The variations involve the removal or addition of any of the phases mentioned above except for the comparison phase. The variation used for the current study employs only one phase: comparison. In the comparison phase, the two conditions were experimentally compared. During this phase, the data patterns of each condition were compared against each other in an effort to identify which intervention was most effective. Demonstration of a functional relation occurs within the comparison phase each time the condition is alternated (Wolery et al., 2018). At least five points of comparison during the comparison phase are required to demonstrate a functional relation using this design.

The current study employed an ATD with random alternation and with condition restriction. The two conditions to be compared were interventions using GNs and TAITs. The conditions were randomly alternated to control for cyclical variability. Prior to each

session, the researcher used a random item generator (phone application) to randomly choose the condition. There was a restriction rule in place that allowed no more than two consecutive sessions in the same condition with a student. For example, if a student was exposed to two consecutive sessions in the GN condition, I would be forced to move to the TAIT condition for the next instructional session.

### ***Threats to Internal Validity***

When compared to other SCRDS, many threats to internal validity are decreased with ATD due to the relatively short intervention duration. However, a shortened design duration presents a different set of challenges when controlling for threats to internal validity. First, the threat of procedural infidelity increases relative to other designs due to not only the shortened nature of the ATD design, but also the rapid condition changes. The current study addressed this threat by having only one interventionist conduct all intervention sessions and conducting fidelity checks on all sessions. This threat is typically most concerning when training has to occur to teach a group of individuals to implement an intervention. Second, cyclical variability can become a concern if conditions are predetermined. This study used random assignment of conditions in addition to condition restrictions to control for this threat. To decrease overexposure to one condition, a rule of only permitting two consecutive sessions in the same condition was created. For example, even when randomly alternated, condition “A” may not repeat more than twice consecutively in the comparison phase. Finally, one requirement of ATD is that the participants must discriminate between the two conditions. The current study used a discriminative stimulus of having an assigned color of paper on which the mini lesson will be printed for each condition. The GN condition materials were printed on light pink paper and the TAIT condition materials were printed on light yellow paper.

## **Materials**

### ***Pre-Teaching Session***

An instructional session before intervention took place with each student to teach the elements of a graphic novel. Although this is a popular medium of reading choice for teens, students with ESN may not have had exposure to them. To ensure students were familiar with the elements of a graphic novel, four important elements were identified in collaboration with an expert in high school social studies instruction and knowledge of graphic novels: panel, gutter, speech, and narration box. A constant time delay (CTD) procedure was used to teach each student both the elements of a graphic novel and where each element is located on a sample page of a graphic novel. During pre-teaching, the students were also allowed to handle a graphic novel (e.g., turn the pages, look at the pictures). Additionally, a vocabulary probe was conducted prior to the intervention. Materials for pre-teaching instruction included laminated index cards with the written word and corresponding picture for each element of a graphic novel, a laminated sample graphic novel page, laminated index cards with all vocabulary words written on them with a corresponding picture for the vocabulary probe session.

### ***Mini Lessons***

Fourteen total mini lessons were created for this study. Because a minimum of five points of comparison is needed for this design, each student will need a minimum of ten lessons (five in GN and 5 in TAIT). I made four lessons to use should the intervention exceed five points of comparison. All mini lessons were printed on US Letter size paper (8.5in x 11in). The mini lessons for the GN condition were created by selecting 2–3-page excerpts from the graphic novels, *The Cartoon Introduction to Economics Volume One: Microeconomics* and *The Cartoon Introduction to Economics Volume Two: Macroeconomics* by Grady Klein and Yoram Bauman (Klein & Bauman, 2011). Excerpts were selected by identifying economics-related concepts that could be demonstrated within a relatively short narrative (about 2-3 pages each). The goal was to keep the lessons relatively short; however,

some lessons exceeded this range to ensure the economics concepts were comprehensively explained. Because the mini lesson content was pulled from the same book and addresses content standards for high school students, all mini lessons (across conditions) were age-appropriate and grade-aligned. Students were exposed to mini lessons in no particular order with the exception of four lessons. The first lesson students participated in was *Optimizing Individual* because it introduced the vocabulary word, *economics*. Additionally, two lessons (i.e., *Unemployment* [GN], *Foreign Currencies* [TAIT], and *Trade Barriers* [TAIT]) required the students have exposure prior knowledge from other lessons before participating in them (see Table 4 for lesson titles). Each GN condition mini lesson was scanned, laminated, and secured with binder three rings to create a booklet. All materials for the GN condition were printed on light pink paper to facilitate student discrimination of conditions.

Content for the mini lessons for the TAIT condition were generated by using only the narrative text (excluding quotes from the characters and pictures) from *The Cartoon Introduction to Economics Volume One: Microeconomics* and *The Cartoon Introduction to Economics Volume Two: Macroeconomics*. Pairing pictures with words within a book or another form of text is common practice for teachers when adapting reading material for students with ESN. To reflect this practice, the addition of pictures paired with the text was generated via *Boardmaker Online*. *Boardmaker Online* is an online platform used by special educators that has many functions but is commonly used to obtain picture supports for students with communication support needs (including those with ESN). The “symbolate” function allows users to quickly create a body of text that has both words and pictures by copying and pasting text into a box and pressing the “enter” button. This function was used to generate the word/picture pairings for the TAIT condition. To adhere to best practices in adding picture supports to text, the researcher followed guidelines outlined by Wakeman et al. (2021) and Hudson et al. (2013) and only added symbols to keywords throughout the text and vocabulary to words. All TAIT condition materials were printed on light yellow paper.

Elements of all the mini lessons included a title page, content (the GN or TAIT

element), concept statement, and the comprehension questions. The title page was a single sheet of paper with only the title of the concept to be taught printed on it. For the current study, the intention of adding a title page was to highlight the concept the student was about to learn about. The content was either the TAIT or GN and was the only element that will be different between the two conditions. At the end of the mini lesson, a simple concept statement was printed on a separate sheet of paper that reinforces the main concept of the mini lesson. The concept statement always included the topic of the mini lesson and a short statement defining it. The final element of the lessons was comprehension questions. Five comprehension questions were created for each lesson (detailed in the next section).

**Table 4**

*Mini Lesson Titles*

<b>Title</b>	<b>Format</b>
Optimizing Individual (Must be first lesson)	GN
Sunk Cost	GN
Trade	GN
Competitive Market	GN
Technological Progress	GN
Interest Rate	GN
Unemployment (must have Competitive Market first)	GN
Fair Division	TAIT
Risk	TAIT
Trade Barriers (must have Trade first)	TAIT
Inflation	TAIT
Foreign Currencies (must have Trade first)	TAIT
Foreign Aid	TAIT
Macroeconomics	TAIT

## **Dependent Variables and Measurement**

### ***Content Acquisition***

Two dependent variables were analyzed in the current study. The primary dependent variable was content acquisition when instruction is delivered using educational GNs or TAITs. Content acquisition was measured by identifying the number of comprehension questions answered independently and correctly after each instructional session. Five comprehension questions were created that correspond with each mini lesson. Additionally, all comprehension questions were aligned with various cognitive learning levels of Bloom's Taxonomy (Bloom et al., 1956).

Published in its original form in 1956, Bloom's Taxonomy aimed to provide a means of classification for student goals within the education system as well as facilitate the "exchange of information about their [teachers] curricular developments and evaluation devices" (Bloom et al., 1956). This framework provided a common language for educators to use when describing student cognition as it relates to content comprehension. In 2001, the Taxonomy was revised to reflect a more sophisticated understanding of learning and child development gained during the nearly 50-year gap since the first publication. The revised Taxonomy introduced not only four dimensions of knowledge (i.e., factual, conceptual, procedural, and meta-cognitive) within each level cognitive dimension, but also the switch in language of the cognitive dimensions from nouns to verbs (Anderson et al., 2001). This shift in language was intended to describe the cognitive processes students use to answer questions and access knowledge. The updated categories are: *Remembering*, *Understanding*, *Applying*, *Analyzing*, *Evaluating*, and *Creating*. Krathwhol (2002) summarized the definitions of each updated category as follows: Remembering is retrieving relevant knowledge from long-term memory; Understanding is determining the meaning of instructional messages, including oral, written, and graphic communication; Applying is carrying out or using a procedure in a given situation; Analyzing is breaking down material into its constituent parts and detecting how the parts relate to one another and to an overall structure of purpose;

Evaluating is making judgements based on criteria and standards; and Creating is putting elements together to form a novel, coherent whole or make an original product. Designing comprehension questions around levels of Bloom's Taxonomy not only allows for diversity of question types, but also represents a hierarchy of question complexity.

All comprehension questions for the current study were designed using a formula to standardize question complexity across all mini lessons. The formula called for three questions to be *Remembering* questions and two *Applying* and/or *Analyzing* questions for a total of five questions. All comprehension questions were validated by both a social studies content expert and experts in education of students with extensive support needs.

When scoring comprehension questions, two sets of scoring codes were created to score both recall (*Remembering*) questions and inferential (*Applying* or *Analyzing*) questions. The scoring codes for recall questions were *I* (Independent), *P* (Page), *S* (Sentence), and *W* (Word). The scoring codes for inferential questions were *I* (Independent), *R* (Relate), *M* (Model), and *W* (Word). Although only independent correct responses were graphically recorded, I continued systematically prompting the student to ensure a correct response to each comprehension question. To be scored as a correct response, the student had to respond correctly within five seconds of the question being asked and without any further prompting from the instructor (no additional verbal, modeled, or physical prompting). Additionally, the correct response must have been communicated clearly (e.g., verbally stating, touching, holding eye gaze, pointing, physically picking up an answer choice). Systematic prompting procedures and detailed descriptions of each code are outlined in the *Procedures* section.

### ***Student Engagement***

Student engagement was measured using the Multiple Option Observation System for Experimental Studies program (MOOSES; Tapp et al., 1992) to collect data on several variables. Observers trained in this program coded the videos of each session for three dimensions of engagement behavior: active engagement, passive engagement, and off-task.

First, active engagement was defined as actively responding to the teacher, writing, reading, or otherwise completing an assigned task. This definition was accompanied by examples and non-examples of actively engaged behaviors. Examples of active engagement included writing on an assigned worksheet page, reading out loud with the class when directed to do so, following along with their finger or with their eyes in the text, working on a computer assigned task, working in a group with others to complete a task, watching a movie shown by the teacher, or reading independently. Non examples of active engagement include watching or listening to the teacher, oriented toward the teacher or speaker and appears to be following instruction or course of events, student is sleeping, or student is in a small group talking off topic.

Second, passive engagement was defined as the student passively attending to instruction by orienting to the teacher or peer if appropriate. Examples of passive engagement included listening to a lecture or watching a presentation, looking at or listening to another student being called on, has head on desk but is looking at the teacher, or oriented toward the teacher or speaker and appears to be following instruction or course of events. Non-Examples of passive engagement included having their head down and not looking at the teacher, reading silently, or looking at or listening to a student talking off topic.

Finally, off task was defined as neither actively engaged nor looking at the teacher but not disrupting the class in any way. Examples of off-task behavior included getting up and walking around the class after being told not to, looking away from the teacher or instructional materials and not paying attention, head on desk and eyes closed, texting, not taking notes when expected to, watching a video on a non-instructional video on YouTube, and talking off topic in a group when supposed to be working on an assignment. Non examples of off-task behavior included looking away and talking to a peer for more than 5 seconds, silently watching an instructional video, or getting up to get a tissue.

Although passive engagement data will be collected during coding, this study will only consider reports of active engagement in data analysis. Active engagement for students



with ESN is associated with increased skill acquisition, increased rates of on-task behavior, and decreased off-task behavior (Bolt et al., 2019; Horn et al., 2021; Horn, 2023; McLeskey et al., 2019).

Time sampling procedures were used when coding the videos to produce a percentage of time actively engaged, passively engaged, or off-task for each session. All students began each session in the passively engaged category and could move between any of the three categories throughout the lesson. Notably, before a coder could mark a change in category of engagement, the student needed to sustain a behavior for at least five seconds.

## **Procedures**

### ***Vocabulary Assessment***

Students interacted with economics-related vocabulary words in two ways. The first was through assessment of their knowledge of the vocabulary words prior to the pre-teaching session and after instructional sessions to measure overall vocabulary content acquisition (pre- and post-test format). The second way the students worked with vocabulary words was during the intervention sessions prior to reading, which is detailed in a subsequent section. The list of words was developed by identifying terms or phrases within the mini lessons that were economics-related and essential to the understanding of the lesson. Each vocabulary word was printed on an index card that contained both the written word and a corresponding picture. In a one-on-one format, I prompted each student to identify the words by asking them to touch or say each one (e.g., “touch/say/look at \_\_\_\_\_”) from a field of three. A correct response was defined as independently and correctly identifying (touching/saying/look at) the correct word. Correct responses were recorded on a data sheet as “+”. An incorrect response was defined as the student selecting an incorrect word or providing no response. No error correction was provided during the pre-test assessment; however, praise feedback was given for correct responses. Post-test data was collected after the instructional sessions at the end of the study. Pre-and post- assessment data from each student was analyzed to evaluate the learning of vocabulary.

### ***Pre-Teaching Session***

To ensure the students were familiar with graphic novels and their features prior to beginning intervention, a pre teaching session consisted of instruction on the key features of a graphic novel. The session had two components; the first of which will be teaching the students four words that are the graphic novel features (panel, gutter, speech, and narration box) and their definitions. The second component was identifying where each feature is located on a sample graphic novel page. Pre-teaching sessions were conducted in a one-on-one format. Constant time delay (CTD) was used to teach students to identify the words and definitions that were taught incidentally.

**Graphic Novel Features Vocabulary.** The elements of a GN were taught using CTD and incidental teaching. First, I conducted a 0-second delay session. I first arranged a field of three index cards containing words (one correct and two distractors) and said “We are going to learn elements of a graphic novel. First, we will do it together, then you can try it by yourself”. Next, I verbally prompted the student to touch a word by saying “touch \_\_\_\_\_”. Immediately following the prompt, I touched the correct index card to demonstrate the correct response to the student. After a correct response was made by the student, I provided verbal praise as well as incidentally taught the definition of the word (e.g., “Good job touching speech! speech is what the characters are saying”). After these steps were conducted with each word, I moved to a 3-second delay. I said “Now you can try by yourself. If you don’t know the answer, wait and I will help you”. Again, I delivered a verbal prompt to touch a word, but this time waiting 3 seconds until touching the correct index card. If the student touched the correct word before the 3-second delay, I provided verbal praise and repeated the definition of the word. If the student made an error, I immediately corrected the student by touching the correct response and repeating the prompt. If the student did not respond after the 3-second delay, I showed the student the correct answer by touching an index card and repeating the prompt.

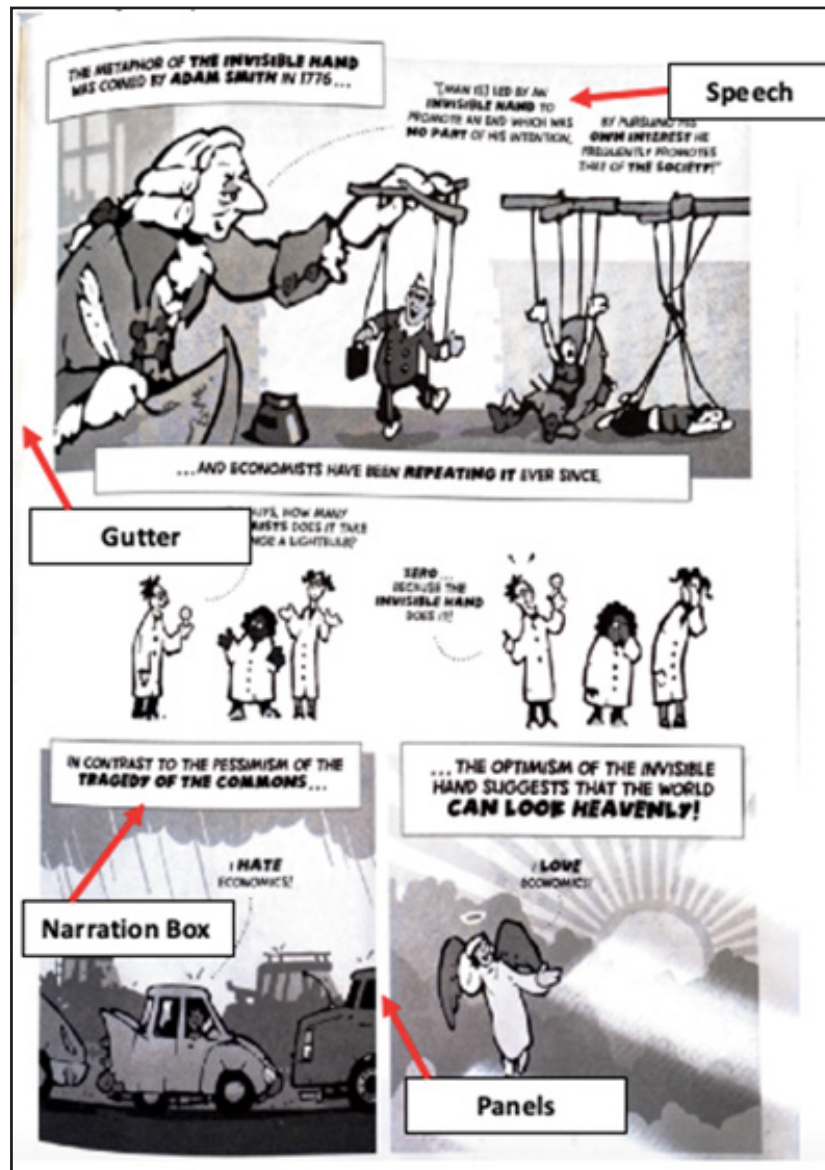
**Graphic Novel Features Location.** After learning the graphic novel features, the

students learned where each feature was located on a sample page of a graphic novel using the Graphic Novel Features Sheet (Figure 4). I used a combination of CTD and SLP during this instruction. CTD was used to initially teach the students where features of the GN were located. SLP was used after the CTD procedure to prompt the student to the correct response if an error was made. I removed the Velcro feature words and began by conducting a 0-second delay round of instruction to show the student exactly where each feature is on the sample page. I said “this is *\_\_feature\_\_*. Touch *\_\_feature\_\_*.” and immediately touch where the feature is on the page with the student. The student was given the Velcro word and prompted to place it in the correct location by pointing to the location. Verbal praise was given to the student after placing the Velcro word on the location. I went through each word with a 0-second delay and then moved to a 3-second delay round. I said and gave the student the Velcro word and verbally prompted by saying, “where does this go?” and waiting a predetermined number of seconds for a response (typically 3-5 seconds). If the student answered correctly, verbal praise was given and the prompt level needed for the student to answer correctly was recorded. If there was no response or an incorrect response, I moved to the next least intrusive prompt, a gesture (e.g., pointing to the location). If the student placed the word in the correct location, verbal praise was given and the prompt level needed for the student to answer correctly was recorded. If after waiting the predetermined number of seconds and the student did not respond or answer incorrectly, I moved to the next least intrusive prompt, providing a model (e.g., placing the word in the correct location) and gave the Velcro word back to the student. If the student answered correctly, verbal praise will be given and the prompt level needed for the student to answer correctly was recorded. If after waiting the predetermined number of seconds and the student did not respond or answered incorrectly, I provided a full physical prompt to ensure the correct response is made (e.g., using hand over hand prompting to place the word in the correct location). The prompt level was recorded, and I continued this procedure with each word. I repeated these steps with each word until the student reached 100% mastery or completed

a total of three instructional sessions.

**Figure 4**

*Elements of a Graphic Novel*



***Intervention Phase***

The intervention phase consisted of three components: vocabulary pre-teaching, mini lesson, and comprehension assessment.

**Vocabulary.** Procedurally, both the GN and TAIT conditions were identical. Each

mini lesson contained one to three vocabulary words to be taught immediately before beginning the lesson. The same index cards with vocabulary words and pictures used during the pretest will also be used for pre teaching. The vocabulary words were taught using CTD and incidental teaching. First, I conducted a 0-second delay session. I arranged a field of three index cards containing words (one correct and two distractors) and said “We are going to learn vocabulary words. First, we will do it together, then you can try it by yourself.” Next, I verbally prompted the student to touch a vocabulary word by saying “touch \_\_\_\_.” Immediately following the prompt, I touched the correct index card to demonstrate the correct response to the student. After a correct response was made by the student, I provided verbal praise as well as incidentally taught the definition of the word (e.g., “Good job touching *interest rate*! *Interest rate* allows us to determine the value of money in the future”). After these steps were conducted with each vocabulary word, I moved to a 3-second delay. I said, “Now you can try by yourself. If you don’t know the answer, wait and I will help you.” Again, I delivered a verbal prompt to touch a vocabulary word, but this time waited 3 seconds until touching the correct index card. If the student touched the correct word before the 3-second delay, I provided verbal praise and repeated the definition of the word. If the student made an error, I immediately corrected the student by touching the correct response and repeated the prompt. If the student did not respond after the 3-second delay, I showed the student the correct answer by touching an index card and repeating the prompt. I repeated these steps with each vocabulary word for that mini lesson until the student reached 100% mastery or completed a total of three instructional sessions.

**Mini Lessons.** After pre teaching the vocabulary words associated with that lesson, I conducted the reading of the mini lessons by completing the steps of the Mini Lesson Task Analysis (Figure 5). The task analysis was created by abbreviating and modifying the story-based lesson (Courtade et al., 2013) task analysis (TA) to accommodate a shorter lesson. The story-based lesson TA was designed to support not only comprehension of a story, but also to promote student engagement. In the current study, the only items present

from the story-based lesson TA were those that targeted student engagement. The first step on the Mini Lesson Task Analysis asked the student to touch/say the title of the mini lesson. I began the mini lesson by saying “Today we are going to learn about \_\_\_topic\_\_\_. Touch/say \_\_\_topic\_\_\_.” The topic was written (with picture supports) on the cover of the mini lesson booklet. System of least prompting (SLP) strategy was used to prompt the students to participate in each step of the Mini Lesson Task Analysis. A suggested prompt hierarchy described by Collins (2022) for students with ESN is *verbal, gesture, model, partial physical, and full physical*. Although this progression of least to most intrusive prompts is standard, best practice is to adapt this hierarchy to the needs of each student. It was determined through conversation with the teacher that the prompting hierarchy typically used with the students was *verbal, model, and physical*. If the student did not respond after the verbal prompt, I moved to the next least intrusive prompt in the prompt hierarchy. I moved through the prompting hierarchy until the student performed the correct response and provided verbal praise. The second and third steps of the Mini Lesson Task Analysis require the student to interact with (say/touch/look at) a word or image within the reading. Steps two and three were individualized to each mini lesson (e.g., “touch/look at the man giving his friend money”, or if encountering a vocabulary word, “touch/say/look at the word *borrow*”). Finally, the fourth step of the Mini Lesson Task Analysis requires the student to touch/say/look at a concept statement at the end of the lesson. The concept statement was a short statement that summarized the main idea or “take away” of the mini lesson. Again, I progressed through the individual students’ prompt hierarchy until the student performed the correct response. I provided verbal praise once the correct response was made.

**Figure 5**

*Mini Lesson Task Analysis*

**Mini Lesson Task Analysis**

<b>Step</b>		<b>Prompting Procedures</b>
1.	Engage with the title	VERBAL: Ask student to interact (e.g., look at, touch, say/touch) with the title of mini lesson. <i>wait 5 sec</i> a. MODEL: Model correct response and ask again (e.g., touch and say title, point to title). <i>wait 5 sec</i> b. PHYSICAL: Physically assist student to make correct response (e.g., hand over hand, use flashlight). Praise student when a correct response is made.
2.	Get the reading started	VERBAL: Ask student, "How do we get our reading started?". <i>wait 5 sec</i> a. MODEL: Model correct response and ask again (e.g., open front cover, active switch to say "open the book please"). <i>wait 5 sec</i> b. PHYSICAL: Physically assist student to make correct response (e.g., hand over hand). Praise student when a correct response is made.
3.	Engage with a word/picture	VERBAL: Ask student to interact (e.g., look at, touch, say/touch) with a word/picture. <i>wait 5 sec</i> a. MODEL: Model correct response and ask again (e.g., touch or say picture/word, point to picture/word). <i>wait 5 sec</i> b. PHYSICAL: Physically assist student to make correct response (e.g., hand over hand, use flashlight). Praise student when a correct response is made.
4.	Engage with a word/picture	VERBAL: Ask student to interact (e.g., look at, touch, say/touch) with a word/picture. <i>wait 5 sec</i> a. MODEL: Model correct response and ask again (e.g., touch or say picture/word, point to picture/word). <i>wait 5 sec</i> b. PHYSICAL: Physically assist student to make correct response (e.g., hand over hand, use flashlight). Praise student when a correct response is made.
5.	Engage with concept statement	VERBAL: Ask student to interact (e.g., look at, touch, say/touch) with the concept statement. <i>wait 5 sec</i> a. MODEL: Model correct response and ask again (e.g., touch and say statement, point to statement). <i>wait 5 sec</i> b. PHYSICAL: Physically assist student to make correct response (e.g., hand over hand, use flashlight). Praise student when a correct response is made.

**Comprehension Questions.** Following the reading of the mini lesson, students answered five comprehension questions. System of least prompts was used to prompt the student to the correct answer; however, two variations of SLP were used depending on the comprehension question. To prompt students when answering the three *Remembering* questions, the instructor used SLP to support the student going back onto the text to find an answer. To prompt students when answering *Applying* or *Analyzing* questions, I used SLP prompting procedures designed for inferential questions whose answers cannot be found directly in the text.

***SLP for Recall Questions.*** All recall, or *Remembering*, questions had answers found directly within the text of the Mini Lesson. I first verbally prompted (least intrusive prompt) the student by asking the question and waiting a predetermined number of seconds for a response (typically 3-5 seconds). If there was no response or an incorrect response, I reread the paragraph within the text that contains the correct answer and asked the question again. If the student answered correctly, verbal praise was given, and the prompt level needed for the student to answer correctly was recorded. After waiting the predetermined number of seconds and the student did not respond or answered incorrectly, I read the sentence only that contains the correct answer. If the student answers correctly, verbal praise was given, and the prompt level needed for the student to answer correctly was recorded. If after waiting the predetermined number of seconds and the student did respond or answered incorrectly, I read the answer to the student (e.g., word or phrase; most intrusive prompt). The prompt level was recorded and the I moved to the next question.

***SLP for Inferential Questions.*** All answers to *Applying* or *Analyzing* questions won't be found directly within the text of the Mini Lessons. To answer inferential questions the I used think aloud prompts to guide the student's thinking to the correct answer. These prompts varied because of the diversity of the comprehension questions; however, the structure of providing least to most support was maintained. First, I prompted the stu-



dent verbally by asking the comprehension question. If the student answered correctly, verbal praise was given, and the prompt level needed for the student to answer correctly was recorded. If after waiting the predetermined number of seconds the student did not respond or answered incorrectly, I asked a question that required the student to relate the question to themselves (e.g., “How do you feel when \_\_\_\_\_?”, “Why would you \_\_\_\_\_?”). For example, if the question was “Why is Arianna hungry?”, the instructor might ask, “Why do you feel hungry at lunch time?”. If the student answered correctly, verbal praise was given, and the prompt level needed for the student to answer correctly was recorded. If after waiting the predetermined number of seconds the student did not respond or answered incorrectly, I modeled making an inference (e.g., I would \_\_answer\_\_\_\_ when...) and asked the original question again. For example, working with the same question listed above (“Why is Arianna hungry?”), I might say “I would feel hungry at lunch if I didn’t have breakfast” and ask “Why is Arianna hungry?”. If the student answered correctly, verbal praise was given, and the prompt level needed for the student to answer correctly was recorded. If after waiting the predetermined number of seconds the student did not respond or answered incorrectly, I said the answer (e.g., word or phrase; most intrusive prompt). The prompt level was recorded, and I moved to the next question.

### **Fidelity and Interobserver Agreement**

All fidelity and interobserver agreement (IOA) data were collected via video recording. All instructional sessions were recorded and stored on a password protected, secure online platform where only the research team can access them. Video recordings were only accessed and viewed for the purpose of collecting fidelity and IOA data.

### ***Procedural Fidelity***

Procedural fidelity, the degree to which the procedures of a condition are implemented as written (Billingsley et al., 1980), data was taken on all intervention sessions. Myself as well as an observer (who was trained by me) collected the data. Procedural fidel-

ity was collected on both the teaching procedures of the Mini Lessons and the prompting procedures during the answering of comprehension questions. Observers used the Mini Lesson Procedural Fidelity Checklist for all procedural fidelity data collection (Figure 6). The checklist was organized first by components of the Student Engagement Task Analysis to be followed by the instructor throughout the reading of the mini lesson, followed by the prompting procedures for each comprehension question. Observers marked each behavior with a “+” as they were observed while watching the videos. The number of observed behaviors was divided by the number of planned behaviors and multiplied by 100 to find percent adherence.

**Figure 6**

*Mini Lesson Procedural Fidelity Checklist*

**Mini Lesson Procedural Fidelity Checklist**

Mini Lesson Title:	Date:
Condition:	Graphic Novel <span style="margin-left: 150px;">Traditional Adapted Informational Text</span>
Observer:	Student Initials:
Lesson Components/Teacher response	

Notes:

<b>Engagement During Reading</b>	<p>1. ____ Greet student and indicate that it's time for social studies</p> <p><b>Engage with the title (verbal)</b></p> <p>2. ____ VERBAL: Ask student to interact (e.g., look at, touch, say/touch) with the title of mini lesson. <i>wait 5 sec</i></p> <p style="padding-left: 20px;">a. ____ MODEL: Model correct response and ask again (e.g., touch and say title, point to title). <i>wait 5 sec</i></p> <p style="padding-left: 20px;">b. ____ PHYSICAL: Physically assist student to make correct response (e.g., hand over hand, use flashlight).</p> <p>3. ____ Praise student when a correct response is made.</p> <hr/> <p><b>Ask student "How do we get our reading started?"</b></p> <p>4. ____ VERBAL: Ask student, "How do we get our reading started?". <i>wait 5 sec</i></p> <p style="padding-left: 20px;">a. ____ MODEL: Model correct response and ask again (e.g., open front cover, active switch to say "open the book please"). <i>wait 5 sec</i></p> <p style="padding-left: 20px;">b. ____ PHYSICAL: Physically assist student to make correct response (e.g., hand over hand).</p> <p>5. ____ Praise student when a correct response is made.</p> <hr/> <p><b>Engage with a word/picture (verbal)</b></p> <p>6. ____ VERBAL: Ask student to interact (e.g., look at, touch, say/touch) with a word/picture. <i>wait 5 sec</i></p> <p style="padding-left: 20px;">a. ____ MODEL: Model correct response and ask again (e.g., touch or say picture/word, point to picture/word). <i>wait 5 sec</i></p> <p style="padding-left: 20px;">b. ____ PHYSICAL: Physically assist student to make correct response (e.g., hand over hand, use flashlight).</p> <p>7. ____ Praise student when a correct response is made.</p>
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<b>Engagement During Reading</b>	<p><b>Engage with a word/picture (verbal)</b></p> <p>8. ____ VERBAL: Ask student to interact (e.g., look at, touch, say/touch) with a word/picture. <i>wait 5 sec</i></p> <p style="padding-left: 20px;">a. ____ MODEL: Model correct response and ask again (e.g., touch or say picture/word, point to picture/word). <i>wait 5 sec</i></p> <p style="padding-left: 20px;">b. ____ PHYSICAL: Physically assist student to make correct response (e.g., hand over hand, use flashlight).</p> <p>9. ____ Praise student when a correct response is made.</p>
	<p><b>Engage with concept statement (verbal)</b></p> <p>10. ____ VERBAL: Ask student to interact (e.g., look at, touch, say/touch) with the concept statement. <i>wait 5 sec</i></p> <p style="padding-left: 20px;">a. ____ MODEL: Model correct response and ask again (e.g., touch and say statement, point to statement). <i>wait 5 sec</i></p> <p style="padding-left: 20px;">b. ____ PHYSICAL: Physically assist student to make correct response (e.g., hand over hand, use flashlight).</p> <p>11. ____ Praise student when a correct response is made.</p>

<b>Comprehension: Literal recall (First 3 Questions)</b>	<p>1. ____ Indicate that it's time to answer questions about what we read.</p> <p><b>Question 1</b></p> <p>2. ____ VERBAL: Asks question verbally and provides three answer choices. <i>wait 5 sec</i></p> <p style="padding-left: 20px;">a. ____ PARAGRAPH: Instructor rereads the paragraph within the text that contains the correct answer and repeats question. <i>wait 5 sec</i></p> <p style="padding-left: 20px;">b. ____ SENTENCE: Instructor rereads the sentence that contains the correct answer and repeats question. <i>wait 5 sec</i></p> <p style="padding-left: 20px;">c. ____ WORD: Instructor points to and reads the correct answer (word or phrase).</p> <p>3. ____ Praise student when a correct response is made.</p>
	<p><b>Question 2</b></p> <p>4. ____ VERBAL: Asks question verbally and provides three answer choices. <i>wait 5 sec</i></p> <p style="padding-left: 20px;">a. ____ PARAGRAPH: Instructor rereads the paragraph within the text that contains the correct answer and repeats question. <i>wait 5 sec</i></p> <p style="padding-left: 20px;">b. ____ SENTENCE: Instructor rereads the sentence that contains the correct answer and repeats question. <i>wait 5 sec</i></p> <p style="padding-left: 20px;">c. ____ WORD: Instructor points to and reads the correct answer (word or phrase).</p> <p>5. ____ Praise student when a correct response is made.</p>

<p><b>Comprehension: Literal recall (First 3 Questions)</b></p>	<p><b>Question 3</b></p> <p>6. ____ VERBAL: Asks question verbally and provides three answer choices. <i>wait 5 sec</i></p> <p>a. ____ PARAGRAPH: Instructor rereads the paragraph within the text that contains the correct answer and repeats question. <i>wait 5 sec</i></p> <p>b. ____ SENTENCE: Instructor rereads the sentence that contains the correct answer and repeats question. <i>wait 5 sec</i></p> <p>c. ____ WORD: Instructor points to and reads the correct answer (word or phrase).</p> <p>7. ____ Praise student when a correct response is made.</p>
<p><b>Comprehension: Inferential (Last 2 Questions)</b></p>	<p><b>Question 4</b></p> <p>6. ____ VERBAL: Asks question verbally and provides three answer choices. <i>wait 5 sec</i></p> <p>a. ____ RELATE: Instructor relates content to the student (e.g., “How do you feel when ____”) and repeats question. <i>wait 5 sec</i></p> <p>b. ____ MODEL: Instructor models how they would relate (e.g., I feel ____ when..”) and repeats question. <i>wait 5 sec</i></p> <p>c. ____ WORD: Instructor tells and shows the student the correct answer.</p> <p>7. ____ Praise student when a correct response is made.</p>
	<p><b>Question 5</b></p> <p>8. ____ VERBAL: Asks question verbally and provides three answer choices. <i>wait 5 sec</i></p> <p>a. ____ RELATE: Instructor relates content to the student (e.g., “How do you feel when ____”) and repeats question. <i>wait 5 sec</i></p> <p>b. ____ MODEL: Instructor models how they would relate (e.g., I feel ____ when..”) and repeats question. <i>wait 5 sec</i></p> <p>c. ____ WORD: Instructor tells and shows the student the correct answer.</p> <p>9. ____ Praise student when a correct response is made.</p>
<p><b>Finish Activity</b></p>	<p>1. ____ Indicate we are finished with social studies and thank student for participating.</p>

***Interobserver Agreement***

Interobserver agreement (IOA), the consistency to which variables can be measured using the instrument (Cooper et al., 2007), was also collected on all intervention sessions. IOA was collected on the content acquisition dependent variable. The number of

agreements was then divided by the number of agreements plus the number of disagreements and multiplied by 100 to produce an overall agreement score (Kazdin, 1978).

Interobserver agreement data was collected using the Comprehension IOA Form (Figure 7). I recorded this data live with the student as the student was answering the comprehension questions. The observer completed the form as they are watching the videotaped lessons.

**Figure 7**

*Comprehension IOA Form*

**Comprehension IOA Form**

Lesson Title: \_\_\_\_\_ Date: \_\_\_\_\_

---

Condition: GN / TAIT      Student Initials: \_\_\_\_\_      Observer Initials: \_\_\_\_\_

---

Instructions: Circle the prompt level needed for the student to answer all questions correctly.

Questions		Prompt Level			
1.	Question #1 (Recall): Instructor asks the question verbally and provides three answer choices	I	P	S	W
2.	Question #2 (Recall): Instructor asks the question verbally and provides three answer choices	I	P	S	W
3.	Question #3 (Recall): Instructor asks the question verbally and provides three answer choices	I	P	S	W
4.	Question #4 (Inferential): Instructor asks the question verbally and provides three answer choices	I	R	M	W
5.	Question #5 (Inferential): Instructor asks the question verbally and provides three answer choices	I	R	M	W

- I = Independent (student answers correctly after the question is asked the first time)
- P = Page (student answers correctly after instructor rereads the page and repeats question)
- S = Sentence (student answers correctly after instructor rereads the sentence containing the correct answer and repeats the question)
- W = Word (student is given the correct word or phrase)
  
- R = Relate (student answers correctly after instructor relates the question to the student [e.g., “How do you feel when \_\_\_\_?”; “Why would you \_\_\_\_?”])
- M = Model (student answers correctly after instructor models making an inference [e.g., “I would feel \_\_\_\_ when..”])

## **Social Validity**

Social validity was measured using a survey designed to capture the perceptions and attitudes of both the teachers and the participants on the use of graphic novels to teach social studies content. I conducted an information session with the classroom teachers. The first session was to provide the teachers with information on how the study would be conducted and what they can expect their students to be doing during study sessions. This information session also outlined the importance of not exposing the students to a similar intervention throughout the duration of the study. Throughout the study, and in line with typical classroom practice, updates on the students' performance were given to the teachers periodically. After the study, the teachers were asked to complete the Social Validity Questionnaire for Teachers (Figure 8) which contained eight Likert scale questions and two open-ended questions. Both teachers observed two intervention sessions before filling out the Social Validity Questionnaire for Teachers. They answered the following questions: (1) How effective do you think using graphic novels is to teach social studies concepts to your students? (Likert scale), (2) How difficult would it be to teach social studies content using graphic novels in your classroom? (Likert scale), (3) How likely would you be to recommend this practice to other teachers? (Likert scale), (4) How likely are you to use this intervention again? (Likert scale), (5) Do you believe your students are more engaged in social studies instruction with graphic novels compared to traditional instruction? (Likert scale), (6) Do you believe your students learned more content in social studies with graphic novels compared to traditional instruction? (Likert scale), (7) Overall, this intervention was beneficial to the students. (Likert scale), (8) If barriers were not an issue (e.g., access to graphic novels, materials pre-made), how likely would you be to include instruction with graphic novels in your classroom? (Likert scale), (9) What is the best or most beneficial aspect of teaching social studies concepts with graphic novels? (Open-ended), and (10) What barriers or challenges exist to teaching social studies with graphic novels? (Open-ended).

## Figure 8

### *Social Validity Questionnaire for Teachers*

#### **Social Validity Questionnaire for Teachers**

1. How effective do you think using graphic novels is to teach social studies concepts to your students?
  - *Completely ineffective*
  - *Somewhat ineffective*
  - *Neutral*
  - *Somewhat effective*
  - *Completely effective*
  
2. How difficult would it be to teach social studies content using graphic novels in your classroom?
  - *Impossible*
  - *Somewhat difficult*
  - *Neutral*
  - *Very feasible*
  - *Easy*
  
3. How likely would you be to recommend this practice to other teachers?
  - *Extremely unlikely*
  - *Somewhat unlikely*
  - *Neutral*
  - *Somewhat likely*
  - *Extremely likely*
  
4. How likely are you to use this intervention again?
  - *Extremely unlikely*
  - *Somewhat unlikely*
  - *Neutral*
  - *Somewhat likely*
  - *Extremely likely*
  
5. Do you believe your students are more engaged in social studies instruction with graphic novels compared to traditional instruction?
  - *Completely unengaged*
  - *Somewhat unengaged*
  - *Neutral*



- *Somewhat engaged*
  - *Completely engaged*
6. Do you believe your students learned more content in social studies with graphic novels compared to traditional instruction?
- *Didn't learn anything*
  - *Learned a little*
  - *Neutral*
  - *Learned some*
  - *Learned a lot*
7. Overall, this intervention was beneficial to the students.
- *Strongly Disagree*
  - *Disagree*
  - *Neutral*
  - *Somewhat agree*
  - *Strongly agree*
8. If barriers were not an issue (e.g., access to graphic novels, materials pre-made), how likely would you be to include instruction with graphic novels in your classroom?
- *Extremely unlikely*
  - *Somewhat unlikely*
  - *Neutral*
  - *Somewhat likely*
  - *Extremely likely*
9. What is the best or most beneficial aspect of teaching social studies concepts with graphic novels?
10. What barriers or challenges exist to teaching social studies with graphic novels?

Following the study, the student participants were also asked to respond to a social validity questionnaire (Social Validity Questionnaire for Students; see Figure 9). Each student was asked the following five questions and provided answer choices with picture supports for each: (1) Did you enjoy learning using the graphic novels? (*I enjoyed it, kind of, I did not like it*), (2) What was your favorite part of learning with graphic novels? (*pictures, characters talking, I did not like it*), (3) Would you like to do more lessons with graphic novels? (*more graphic novels lessons, maybe, no more graphic novel lessons*), (4) Do you feel like you learned a lot about economics from the lessons? (*I learned a lot, a little, did not learn*), (5) Do you think learning about economics is important for your future? (*important, maybe, not important*).

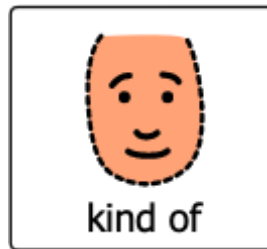
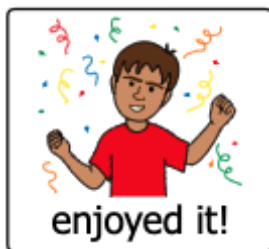
**Figure 9**

*Social Validity Questionnaire for Students*

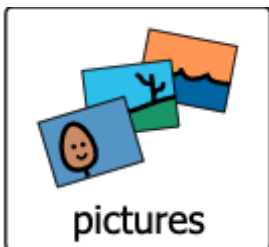
### Social Validity Questionnaire for Students

Student Initials \_\_\_\_\_

1. Did you enjoy learning using the graphic novels?



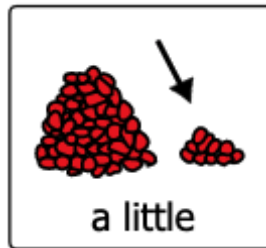
2. What was your favorite part of learning with graphic novels?



3. Would you like to do more lessons with graphic novels?



4. Do you feel like you learned a lot about economics from the lessons?



5. Do you think learning about economics is important for your future?



### Data Analysis

Visual analysis is a hallmark of single-case research design. Visual inspection of level, trend, and variability are used to determine not only the presence of a functional relation, but also the strength and direction of the relationship. Visual analysis of data in an ATD differs from other SCRDs due to the flexible nature and variations that are possible. The current study included only one phase: comparison. Due to the absence of a baseline condition, a typical AB comparison was not possible. Rather, demonstrations of effect occurred between the data points when an alternation takes place. For example, each time one data point from each condition was collected, an opportunity for comparison is present. However, because replication of effect is necessary to determine if a functional relationship

exists in SCRD, a minimum of five points of comparison is needed in an ATD to demonstrate experimental control (Wolery et al., 2018).

## CHAPTER FOUR

### RESULTS

In the following sections, I will describe the outcomes of the intervention on the dependent variables (i.e., student content acquisition and engagement) with findings described individually by student and further broken down by condition. Vocabulary acquisition for each student is also described. Further, results of both teacher and student social validity measures will be described.

The primary dependent variable, content acquisition, will be described as low, medium, or high levels of independent correct responses as suggested by Burton (2018). A low level will refer to scores that are either 0 or 1, a moderate level refers to scores either 2 or 3, and a high level refers to scores of either 4 or 5 (0 = no question answered correctly, 1 = one answered correctly, 2 = two answered correctly, 3 = three answered correctly, 4 = four answered correctly, 5 = five answered correctly).

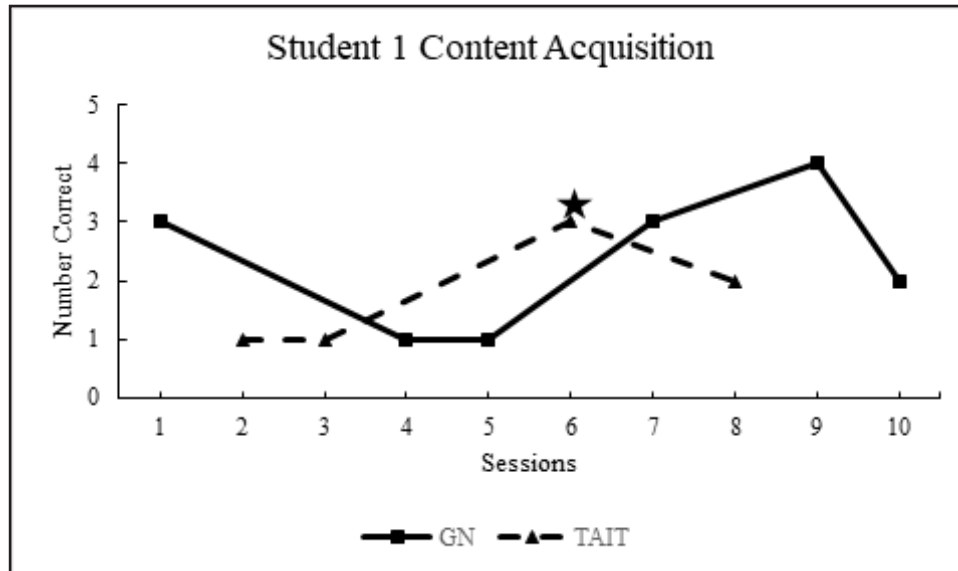
#### **Student 1**

##### ***Content Acquisition***

Overall, correct and independent responding for Student 1 ranged from 1 to 4 with a mean of 2.04. In the GN condition responses ranged from 1 to 4 with a mean of 2.33 and in the TAIT condition responses ranged from 1 to 3 with a mean of 1.75. Overall, Student 1 answered 30% of all recall questions correctly (GN= 50%, TAIT= 25%) and 35% of all inferential questions correctly (GN= 42%, TAIT= 50%). See Figure 10.

**Figure 10**

*Student 1 Content Acquisition*



**GN Condition.** Student 1 began intervention in the GN phase with a total of three comprehension questions answered correctly. He was back in the GN phase for sessions 4 and 5 and answered one question correctly during each of those sessions. During session 7 the number of comprehension questions answered correctly rose to three and increased to four in session 9. In session 10, the final session in the GN phase, Student 1 answered three questions correctly. Overall, in this condition, Student 1 demonstrated a moderate level of independent correct responses with an immediate decrease in level that stayed low for two consecutive sessions. The level of independent correct responding increases to a moderate-high level in sessions 7 and 9 and returns to a moderate to low level in session 10.

**TAIT Condition.** Student 1 was first exposed to the TAIT condition in session 2 and remained in this condition until session 3. One question was answered correctly and independently during both sessions. During session 6 independent correct responding increased to three questions answered correctly. The final session in this condition was session 8, during which Student 1 answered two questions correctly. Overall, in this condition, Student 1 began with two consecutive sessions at a low level of independent correct responding, then increased independent correct responding to three and two questions an-

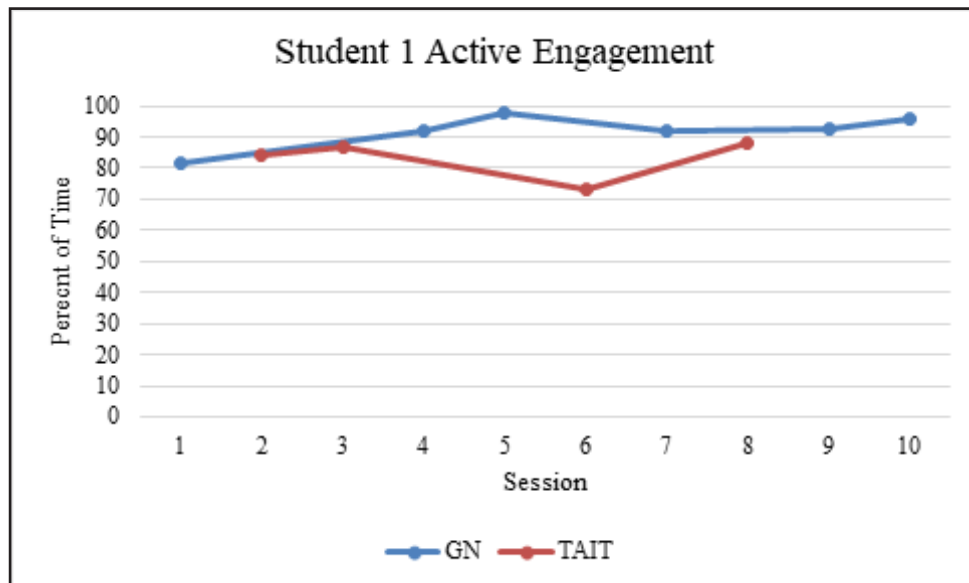
swered correctly in sessions 6 and 8. Notably, in session 6 (TAIT condition) this student began tracking their progress (i.e., filling in a bar graph representing how many questions he answered independently and correctly), which resulted in a higher level of independent correct responding for the remainder of the study when compared to sessions before 6 in both conditions.

### ***Student Engagement***

Overall, across all sessions, Student 1 ranged from 73% to 97.9% of the time actively engaged ( $M = 85.45\%$ ). During GN sessions, Student 1 ranged from 81.9% to 97.9% ( $M = 92\%$ ) and 73% to 88.4% ( $M = 83.13\%$ ) during TAIT sessions. See Figure 11.

**Figure 11**

*Student 1 Active Engagement*



**GN Condition.** Student 1 began intervention sessions in the GN condition at 81.9% actively engaged. Active engagement increased to 92% and 97.9% over the course of the subsequent two sessions (sessions 4 and 5). In session 7, Student 1's engagement dropped to 91.7% and rose slightly in session 9 to 92.7%. Student 1 was 95.8% actively engaged during the last session in the GN phases (session 10). Overall, in this condition, Student

1 remained relatively highly actively engaged for the duration of the study. Following the first GN session, in which he was engaged 81.9% of the time, engagement steadily increased until session 7, in which he was engaged 91.7% of the time. Following session 7, engagement gradually, but steadily increased for the remainder of the GN sessions.

**TAIT Condition.** Student 1 began the TAIT condition in session 2 at 84.1% actively engaged and increased to 87% in session 3. Session 6 represents the lowest engagement score of all TAIT sessions at 73%. Finally, in session 8, Student's engagement was 88.4%, which was the highest engagement score in the TAIT condition. Overall, in this condition, Student 1's engagement remained relatively similar in sessions 2 and 3 and decreased in session 6. In the final session in the TAIT condition (session 8), active engagement returned back to similar levels in the first two sessions.

## **Student 2**

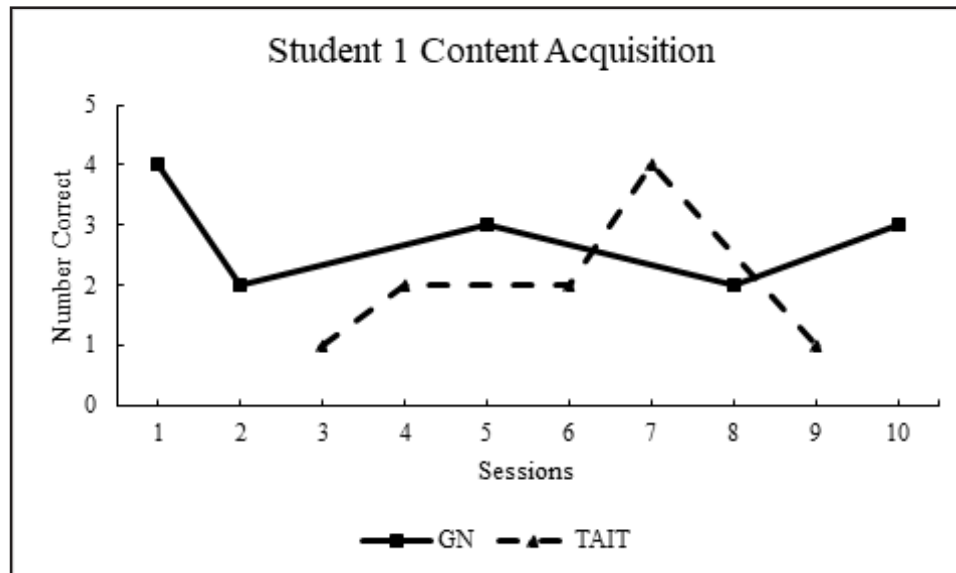
### ***Content Acquisition***

Overall correct and independent responding for Student 2 ranged from 1 to 4 with a mean of 2.4. In the GN condition responding ranged from 2 to 4 with a mean of 2.8 and ranged from 1 to 4 with a mean of 2 in the TAIT condition. Overall, Student 2 answered 43% of all recall questions correctly (GN = 60%, TAIT = 26%) and 55% of all inferential questions correctly (GN = 50%, TAIT = 60%). See Figure 12.



**Figure 12**

*Student 2 Content Acquisition*



**GN Condition.** Student 2 began the first two sessions of intervention in the GN condition. In the first session, he correctly answered four questions followed by two questions in session 2. Session 5 was the next session in the GN condition with Student 2 answering three questions correctly. Sessions 8 and 10 were the final sessions in the GN condition with two and three questions answered correctly. Overall, in this condition, Student 2 demonstrated a moderate level of responding with the exception of the first session, where he answered four questions correctly. His correct and independent responses remained moderate and stable for the remainder of the GN sessions (between 40% and 60% accuracy).

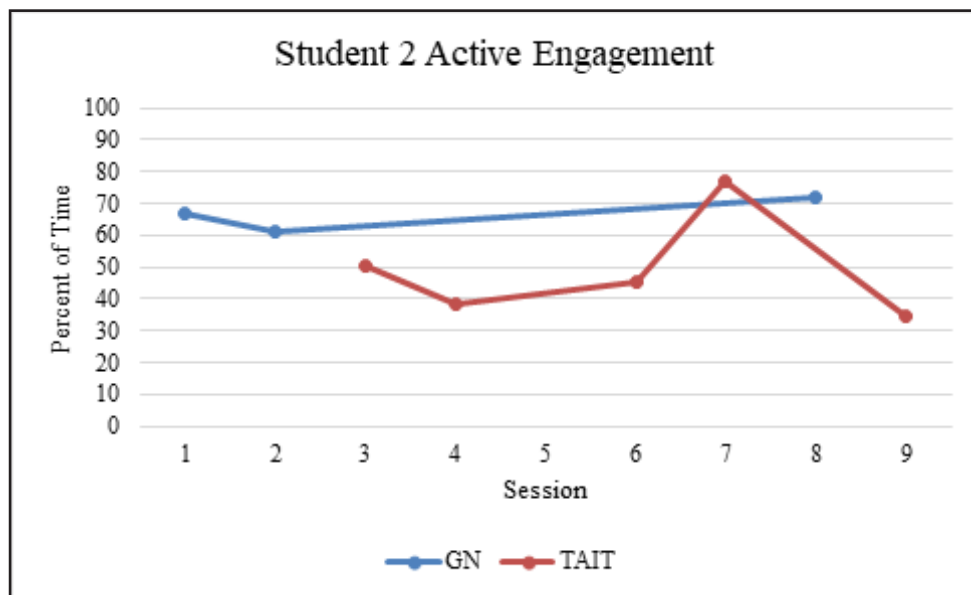
**TAIT Condition.** Student 2 began the TAIT condition on session 3 and answered one question correctly. In sessions 4 and 6, he answered two questions correctly, followed by an increase to four questions answered correctly in session 7. In the final session in this condition, session 9, Student 2 answered only one question correctly. Overall, in this condition, Student 2 started the first three sessions with a low and stable level of responding (between 20% and 40% accuracy). Responding increased in session 4 but greatly decreased during the last session in this condition.

### *Student Engagement*

Across all sessions, Student 2 ranged from 34.7% to 77.1% ( $M = 55.7\%$ ) of the time actively engaged. During GN condition sessions, Student 2 ranged from 61.2% to 72.1% ( $M = 66.7\%$ ) actively engaged and 38.3% to 77.1% ( $M = 49.1\%$ ) of the time actively engaged in TAIT sessions. See Figure 13.

**Figure 13**

*Student 2 Active Engagement*



**GN Condition.** Student 2 began the first two intervention sessions in the GN condition with 66.8% and 61.2% active engagement. During the final session in this condition, session 8, Student 2 was actively engaged 72.1% of the time. Notably, data for session 5 was unable to be collected for student engagement due to inappropriate camera angling that did not capture the student correctly. Overall, Student 1 remained in the relatively moderately of actively engaged with little variability for the duration of the GN condition.

**TAIT Condition.** Student 2 began intervention in the TAIT condition in sessions 3 and 4 with 50.2% and 38.8% actively engaged. In session 6, his active engagement slightly increased to 45.1% in this lesson. During session 7 Student 2's engagement greatly increased to 77.1% before dropping to the lowest percent of time engaged throughout all

instructional sessions, 34.7%. Overall, during the first three sessions in the TAIT condition (sessions 3, 4, and 6), Student 2 demonstrated a relatively low level of engagement before greatly increasing in session 7. In the final session in this condition, session 9, his engagement greatly decreased.

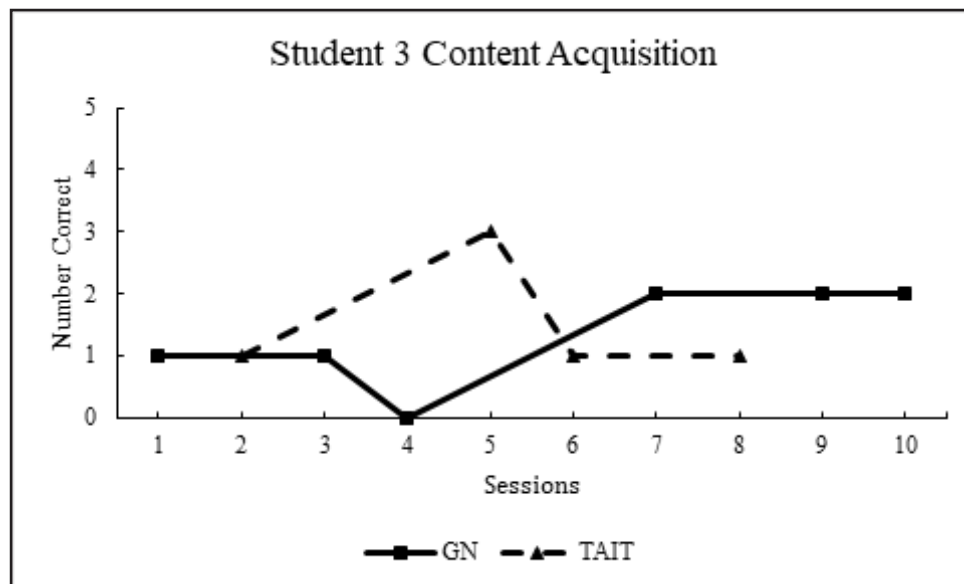
### Student 3

#### *Content Acquisition*

Overall, Student 3's correct and independent responding ranged from 0 to 3 with a mean of 1.4. In the GN condition, responding ranged from 0 to 2 with a mean of 1.3 and ranged from 1 to 3 with a mean of 1.5 in the TAIT condition. Across all sessions, Student 3 answered 26% of all recall questions correctly (GN = 28%, TAIT = 25%) and 30% of all inferential questions correctly (GN = 25%, TAIT = 38%). See Figure 14.

**Figure 14**

*Student 3 Content Acquisition*



**GN Condition.** Student 3 began intervention in the GN phase with a total of one question answered correctly. He returned to the GN condition in session 3 and he again answered one question correctly. In session 4, Student 3 did not answer any questions cor-

rectly, but increased his accuracy to two questions correctly in session 7. He maintained answering two questions correctly for the remainder of GN intervention conditions (sessions 9 and 10). Overall, in this condition, Student 3 maintained a low level of responding until session 7, in which he demonstrated a moderate level of independent correct for the duration of sessions in this condition.

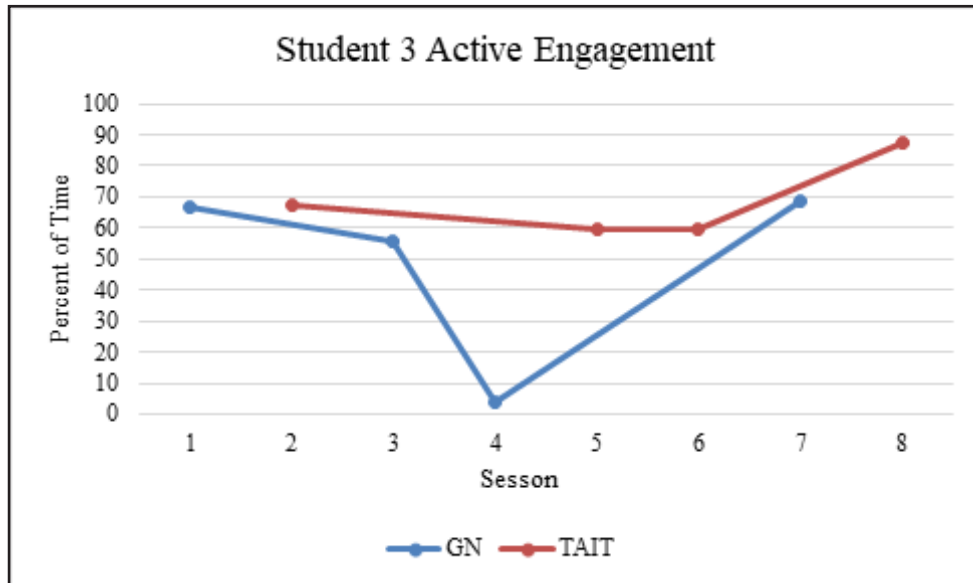
**TAIT Condition.** Student 3 began TAIT condition instruction in session 2 and answered one question correctly, followed by an immediate increase to three answered correctly in session 5 (the highest accuracy across all sessions). Finally, he answered one question correctly for the remaining two sessions in this condition (sessions 9 and 10). Overall, Student 3's responding was relatively more variable in comparison to the GN condition due to his increase in accuracy in session 5. However, after session 5, he maintained a low level of independent correct responding for the remaining two sessions in the condition.

### ***Student Engagement***

Across all sessions, Student 3 ranged from 3.7% to 87.6% of the time actively engaged ( $M = 58.5\%$ ). During GN sessions, Student 3 ranged from 3.7% to 68.9% ( $M = 48.8\%$ ) and 59.5% to 87.6% ( $M = 68.5\%$ ) during TAIT sessions. Notably, Student 3 did participate in 10 instructional sessions; however, videos of the final two sessions of intervention (both in the GN condition) were unable to be coded for student engagement, resulting in missing data. In total, eight of the 10 sessions were coded for student engagement. See Student 3 in Figure 15.

**Figure 15**

*Student 3 Active Engagement*



**GN Condition.** Student 3 began intervention in the GN condition at 66.4% actively engaged. This percentage decreased in session 3 to 56%. The lowest active engagement score was observed during session 4 at 3.7% before greatly increasing to 68.9% in the final session in this condition (session 7). The final two sessions in the GN condition were unable to be coded for student engagement. Overall, Student 3 maintained a relatively moderate level of engagement for the first two sessions before greatly dropping to 3.7% engagement. Engagement greatly increased in the last session.

**TAIT Condition.** Student 3 began the TAIT condition in the second session at 67.1% actively engaged. In session 5, he was engaged for 59.5% of the lesson and maintained nearly identical engagement in session 6 at 59.7%. Engagement rose to 87.6% for the next session in this condition, making it the overall highest engagement percentage for Student 3. Overall, he maintained a relatively moderate level of engagement for the first three sessions in this condition (sessions 2, 5, and 6). Finally, he increased his engagement in the last session of the study.

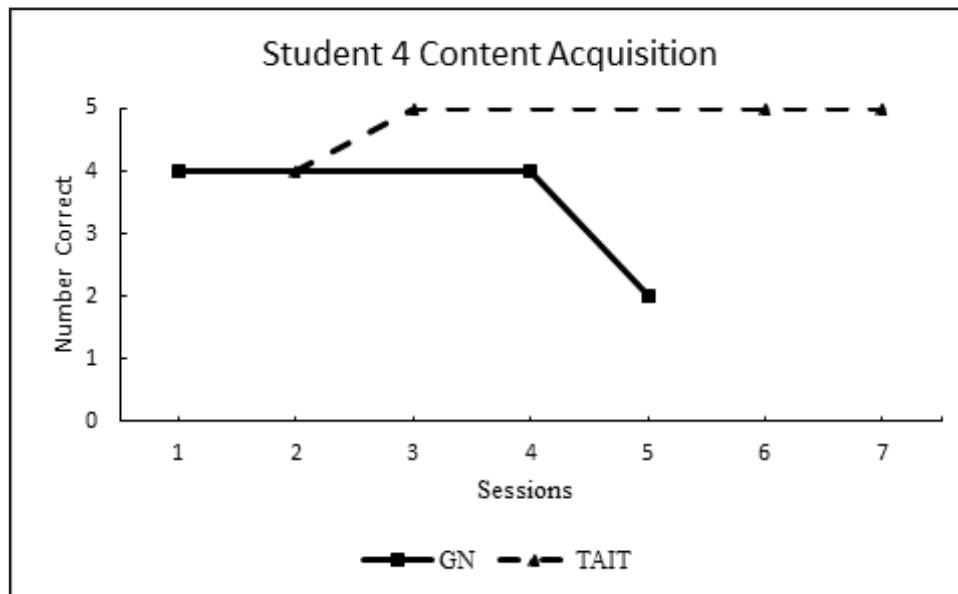
## Student 4

### *Content Acquisition*

Student 4's correct and independent responding ranged from 2 to 5 with a mean of 4.1. In the GN condition, responses ranged from 2 to 4 questions answered correctly with a mean of 3.3 and in the TAIT condition the range was 4 to 5 answered correctly with a mean of 4.8. Overall, Student 4 answered 81% of the total recall questions correctly and 86% of the total inferential questions correctly. Student 4 completed only seven sessions of intervention due to him not being available during instructional sessions (three in GN and four in TAIT). See Figure 16.

**Figure 16**

*Student 4 Content Acquisition*



**GN Condition.** Student 4 began intervention in the GN condition where he answered four questions correctly. He maintained this accuracy for the following GN session, session 4. Finally, his accuracy decreased to two questions answered correctly in session 5. Overall, he demonstrated a high level of independent correct responding during the first two GN conditions followed by a decrease to a low level in the last session.

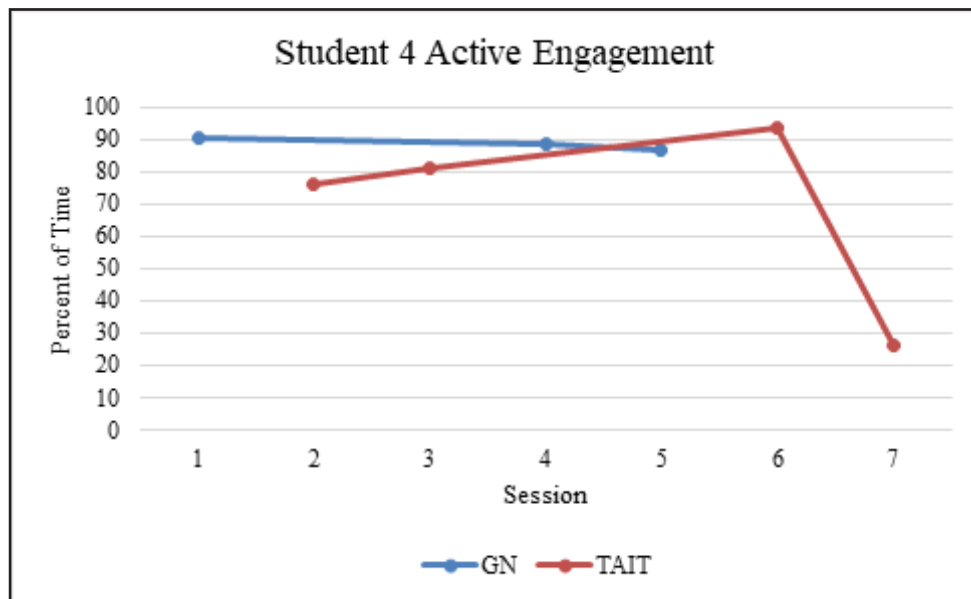
**TAIT Condition.** Student 4 began the TAIT condition in session 2 where he answered four questions correctly. This session was followed by another TAIT session (session 3) where he increased in accuracy to 5 (all questions were answered correctly and independently). He maintained 100% accuracy for the remainder of sessions in this condition (sessions 6 and 7). Overall, Student 4 demonstrated a high level of responding throughout the duration of the TAIT condition. The only occurrence that a question was missed was the first session in the condition (session 2).

***Student Engagement***

Across all sessions, Student 4’s active engagement ranged from 26.1% to 93.8% ( $M = 77.5\%$ ). During GN sessions, Student 4 ranged from 86.5% to 90.3% ( $M = 88.4$ ) and 26.1% to 93.8% ( $M = 69.2\%$ ) in the TAIT condition. See Figure 17.

**Figure 17**

*Student 4 Active Engagement*



**GN Condition.** Student 4 began intervention in the GN condition at 90.3% actively engaged. In session 4, he was engaged 88.5% of the time and finished the GN condition with 86.5% engagement. Overall, Student 4 maintained a relatively high level of engage-

ment throughout the GN condition; however, his active engagement scores fell marginally across sessions in this condition.

**TAIT Condition.** Student 4 began TAIT intervention sessions in session 2 at 76.2% actively engaged. During session 3, his engagement was 80.8%. In session 6, Student 4 was actively engaged 93.8% of the time. Finally, in session 7, his engagement was 26.1%. Overall, Student 4 began the TAIT condition with a relatively moderate level of engagement in the first two TAIT sessions. He demonstrated a relatively high level of engagement in session 6 before greatly decreasing his engagement in session 7.

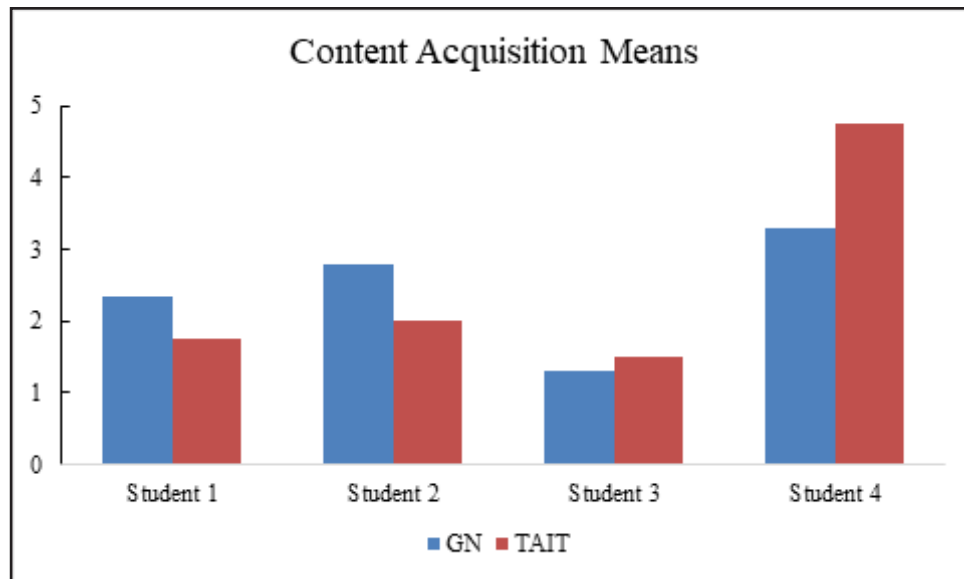
### **Summary**

Upon analysis of all mean scores on student content acquisition, it is not possible to conclude which condition is superior to any degree of certainty. Students 1 and 2 both demonstrated higher performance means in the graphic novel condition with Student 1 achieving a mean of 2.33 (TAIT  $M = 1.75$ ) and Student 2 scoring a mean of 2.8 (TAIT  $M = 2$ ). Conversely, Students 3 and 4 scored higher in the TAIT condition on content acquisition with Student 3 scoring a mean of 1.5 (GN  $M = 1.3$ ) and Student 2 scoring 4.75 (GN  $M = 3.3$ ). See Figure 18.



**Figure 18**

*Content Acquisition Summary*



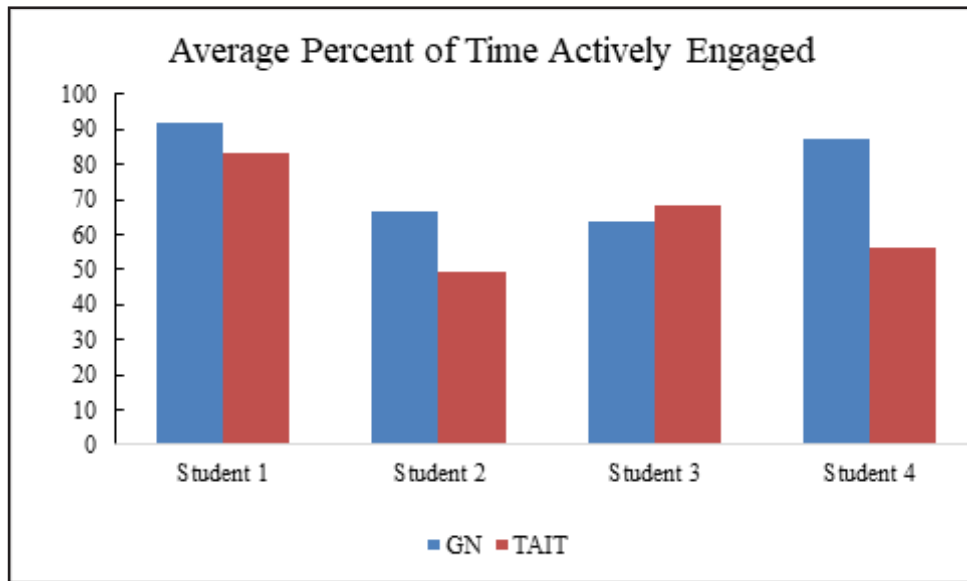
Student engagement means across all students demonstrate a similar level of engagement across conditions; however, engagement is slightly higher for three students in the GN condition. On average, Students 1, 2, and 4 all demonstrated higher levels of engagement in the GN condition. Note that the described percentages represent the average percent of time the student was actively engaged during lessons. Student 1 averaged 92% (TAIT  $M = 83.1\%$ ), Student 2 averaged 66.7% (TAIT  $M = 49.1\%$ ), and Student 4 averaged 87.2% (TAIT  $M = 56.2\%$ ). Student 3's average engagement between the conditions favors the TAIT condition with a mean of 68.5% (GN  $M = 63.8\%$ ). Notably, this is the smallest difference in student engagement means between the two conditions (difference of 4.7%). See Figure 19.

Vocabulary acquisition increased for all students by the end of the study. Student 1 increased his overall vocabulary acquisition from 42% correct on the pre-test at the beginning of the study, to 83% on the post-test at the end of the study. Student 2 increased his overall vocabulary acquisition from 35% correct on the pre-test at the beginning of the study, to 55% on the post-test at the end of the study. Student 3 increased his overall vocab-

ulary acquisition from 35% correct on the pre-test at the beginning of the study, to 63% on the post-test at the end of the study.

**Figure 19**

*Student Engagement Summary*



### **Additional Analysis**

Because clear separation of the data for both content acquisition and student engagement were not observed, additional measures were taken to further describe the data. First, I explored differences in responding by the type of questions being asked. For each lesson, two *Remembering* (recall) questions were asked and three *Applying* and/or *Analyzing* (inferential) questions were asked. Student 1 answered 30% of all recall questions correctly and independently and 35% of all inferential questions correctly and independently. Student 2 answered 43% of recall questions correctly and independently and 55% of all inferential questions correctly and independently. Student 3 answered 26% of recall questions correctly and independently and 30% of all inferential questions correctly and independently. Finally, Student 4 answered 81% of all recall questions correctly and independently and 86% of all inferential questions correctly and independently.

Second, I explored the prompt levels that were needed for a correct response. All content acquisition data analysis in this study was based on only independent and correct responses. This means that correct responses after one, two, three, or four prompts were not accounted for. To further explore potential differences among the interventions, I created new graphs for each student that accounted for both correct and independent responding and correct responding after one prompt. After visually analyzing the new graphs, I concluded that the prompt level used to ensure a correct response was not useful in further explaining the lack of separation of data among the conditions.

### **Fidelity and IOA**

Fidelity of implementation was recorded by an observer using the Mini Lesson procedural Fidelity Checklist (Figure 6). Across all intervention sessions, fidelity of implementation was calculated at 92% adherence. Interobserver agreement across all sessions was also coded by an observer using the Comprehension IOA Form and was calculated at 98% agreement.

### **Social Validity**

Following the intervention, both the teachers and participants were asked their perceptions of using graphic novels to teach economics concepts. All teachers and participants completed the questionnaires. Findings are described in the following sections.

#### ***Teacher Questionnaire***

The first eight items on the questionnaire were Likert scale questions. Overall, both teachers' perceptions were positive. In response to question one (*How effective do you think using graphic novels is to teach social studies concepts to your students?*), one teacher indicated *completely effective*, and one indicated *somewhat effective*. For question two (*How difficult would it be to teach social studies content using graphic novels in your classroom?*), both teachers answered *very feasible*. For questions three and four (*How likely would you be to recommend this practice to other teachers? How likely are you to*

*use this intervention again?*), both teachers answered *extremely likely*. For question five (*Do you believe your students are more engaged in social studies instruction with graphic novels compared to traditional instruction?*), both teachers indicated *somewhat engaged*. In response to question six (*Do you believe your students learned more content in social studies with graphic novels compared to traditional instruction?*), one teacher responded *learned a lot* and one teacher responded *learned some*. Both teachers responded *strongly agree* to question seven (*Overall, this intervention was beneficial to the students*). Both teachers responded *extremely likely* to question eight (*If barriers were not an issue [e.g., access to graphic novels, materials pre-made], how likely would you be to include instruction with graphic novels in your classroom?*).

The final two items on the questionnaire were short answer. In response to the first short answer question (*What is the best or most beneficial aspect of teaching social studies concepts with graphic novels?*), one teacher answered, “The most beneficial aspect of teaching social studies concepts using graphic novels is that the concepts can be paired with pictures. Visual aids are important in helping students with extensive support needs learn new skills and concepts” and the other teacher responded, “Students are far more engaged with graphic novels than a typical adapted text, thus increasing the likelihood that they will retain the content.” For question two (*What barriers or challenges exist to teaching social studies with graphic novels?*), one teacher answered,

The biggest barriers to teaching social studies concepts using graphic novels is the lack of access to the materials. Before observing this study, I had never heard of teaching social studies using graphic novels and I don’t know where to find any pre-made materials if any exist.

The other teacher stated,

One barrier is simply access to quality materials, especially materials that are age appropriate. This, however, tends to be a challenge when teaching most content to older students with complex needs. Additionally, it can be harder to differentiate the text in a graphic novel to suit a classroom with a wide array of needs and reading levels, which is not as much the case with your typical adapted text.

### ***Student Questionnaire***

The student questionnaire consisted of five questions with three choices each. Overall, students perceived the intervention positively with some variation in responses. In response to question one (Did you enjoy learning using the graphic novels?), all students reported they enjoyed it. In response to question two (What was your favorite part of learning with the graphic novels?) responses varied with 50% of the students reporting that they enjoyed the characters talking, 25% reported they like the pictures, and 25% reported they did not like it. Question three (Would you like to do more lessons with graphic novels?) produced varying responses as well, with more 50% of students reporting more graphic novels, 25% reporting maybe, and 25% reporting no more graphic novels. Question four (Do you feel like you learned a lot about economics from the lessons?) responses were evenly divided among two answers, I learned a lot (50%) and a little (50%). Finally, in response to question five (Do you think learning about economics is important for your future?) student responses varied with 50% reporting important, 25% reporting maybe, and 25% reporting not important. See Table 4.

**Table 5***Student Social Validity Responses*

<b>Question</b>	<b>Responses</b>		
Did you enjoy learning using the graphic novels?	Enjoyed it! (100%)	Kind of (0%)	Did not like it (0%)
What was your favorite part of learning with the graphic novels?	Pictures (25%)	Characters talking (50%)	Did not like it (25%)
Would you like to do more lessons with graphic novels?	More graphic novels (50%)	Maybe (25%)	No more graphic novels (25%)
Do you feel like you learned a lot about economics from the lessons?	I learned a lot! (50%)	A little (50%)	Did not learn (0%)
Do you think learning about economics is important for your future?	Important (50%)	Maybe (25%)	Not important (25%)

## CHAPTER FIVE

### DISCUSSION

The purpose of this study was to compare student outcomes (i.e., social studies content acquisition and student engagement) when using GN or TAIT with high school students with ESN. Additionally, social validity of the intervention was also evaluated. Specifically, I sought to answer the following research questions:

1. Is there a difference in economics content acquisition for high school students with ESN when instruction is delivered using educational GNs or TAIT?
2. For high school students with ESN, is there a difference between student engagement levels when instruction is delivered using educational graphic novels or TAIT?
3. What are students' perceptions of the use of and the effects of graphic novels to teach social studies content?
4. What are teachers' perceptions of the use of and the effects of graphic novels to learn social studies content?

Discussion of findings is organized by student and includes insights into the research questions followed by discussion of student and teacher perceptions in terms of social validity, limitations and directions for future research, and conclusion. Additionally, I highlight anecdotal observations about students' demeanor or attitudes that may have influenced their results.

## **Student 1**

Student 1 appeared to be the most excited about the graphic novels out of all participants. There were times when he would laugh at a joke in the graphic novel and have to recompose himself before continuing reading. He indicated that he was disappointed when we did lessons from the TAIT condition by asking me if we could read a graphic novel. Student 1 was always excited to work and asked multiple questions and made comments pertaining to the content.

### ***Content Acquisition and Engagement***

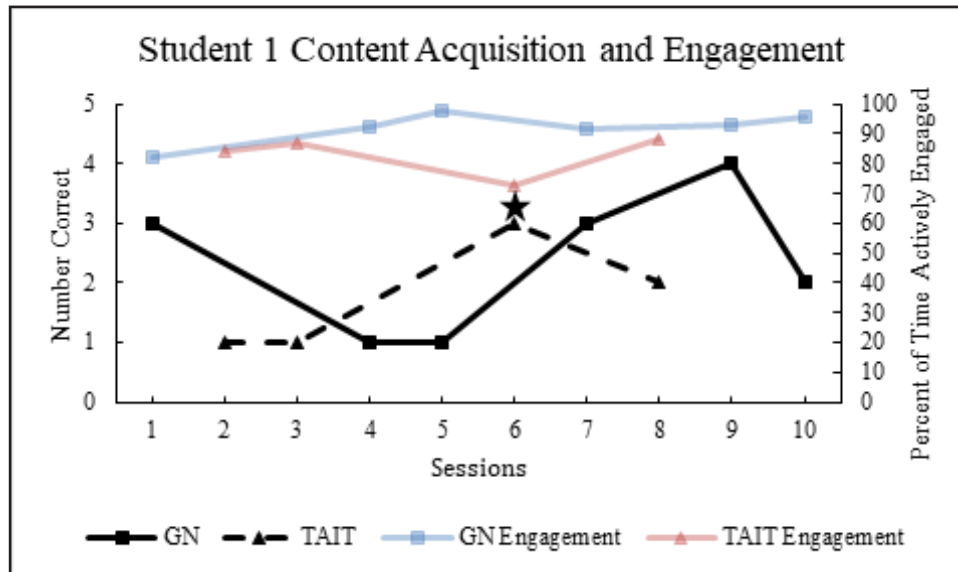
When presented together on one graph (see in Figure 20), the relationship between the two dependent variables becomes clearer. It is evident that Student 1 was consistently engaged throughout all intervention sessions. However, it appears he was slightly more engaged during GN sessions, even when correct and independent responding levels were low. He also performed slightly better on content acquisition in the GN condition. Due to low performance levels, a self-monitoring element was added so he could see his progress. During the first session this was implemented (session 6), engagement dropped to 73%. I believe during this lesson, he shifted his approach to this lesson to “just get the questions right” from “have fun and enjoy the lesson”. During this session there was a noticeable difference in his usual behavior, and he appeared to be “all business” and focused on the task of getting the questions correct.

Although Student 1 outwardly expressed his excitement and interest in graphic novels, most of his responses to the questionnaire did not reflect this. Results from the questionnaire indicate that he “did not like it (the GNs),” but he also indicated he “enjoyed it (learning with the GNs)” in the previous question. He also indicated that he would “maybe” like to do more lessons with GNs, “learned a little” during lessons with the GNs, and that learning about economics was “not important” to his future.



**Figure 20**

*Student 1 Content Acquisition and Engagement*



**Student 2**

Student 2 was also eager to work with me and he appeared to also prefer the GN lessons over the TAIT lessons. He asked once if we could use the “pink ones” (the color of paper the graphic novel lessons were printed on) when I started a TAIT lesson with him. Although, he did show some preference to the GN condition, the preference was not as clear as Student 1. Student 2 enjoyed chatting and asking me questions about my plans for the day, so we agreed we would talk for five minutes both before and after the lessons. Student 2 wanted to read the material himself, which involved me reading it and him repeating it back to me. This raised two concerns for me. First, I was concerned this would make the lessons very long (his speech was very slow), and second, that this would interfere with his comprehension of what was being read. I liked that he wanted to read and I wanted to support this desire, but to compromise (considering my concerns described above) I allowed him to help me read the last page or two of each lesson.

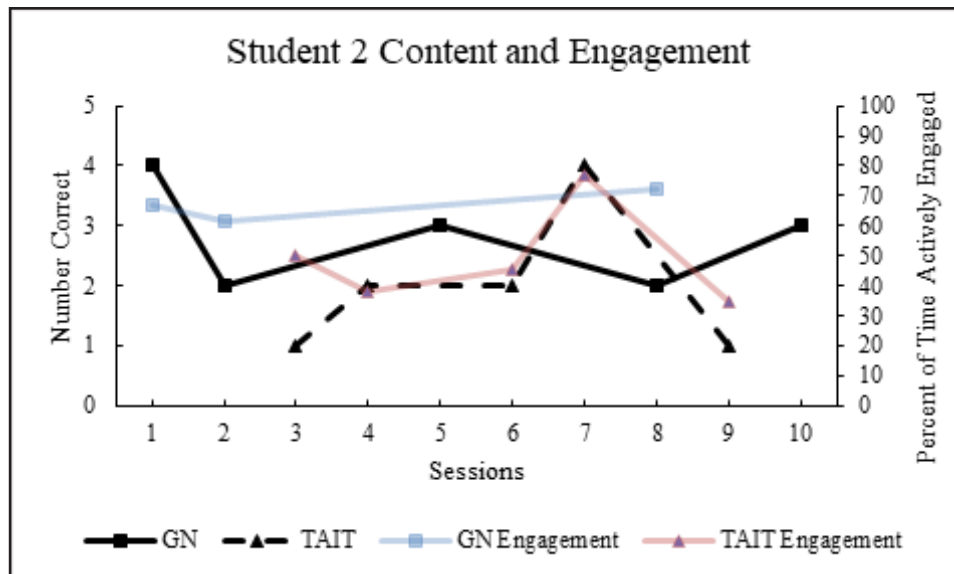
***Content Acquisition and Engagement***

Considering both variables on one graph (see Figure 21), several interesting find-

ings are evident. When looking at the data paths of content acquisition for each condition in relation to the engagement data paths, it appears that when Student 2 was engaged in a lesson, content acquisition increased, which is consistent with research in student engagement. The GN engagement data path tracks especially closely with the GN content acquisition data path. Unfortunately, we were not able to code data on engagement for sessions 5 and 10 engagement data were unable to be coded. These would have been valuable data points in assessing the true strength of the relationship between engagement and content acquisition. Interestingly, the TAIT engagement data path almost mirrors that of the TAIT content acquisition path, which would support the conclusion that keeping this student engaged is key to his acquisition of content. This finding is similar to other studies investigating the relationship between student engagement and content acquisition (Berrong et al., 2007; Brophy & Good, 1986; Horn, 2023; Lovelace et al., 2014). This finding is similar to other studies investigating the relationship between student engagement and content acquisition (Berrong et al., 2007; Brophy & Good, 1986; Horn, 2023; Lovelace et al., 2014). Session 7 for this student stands out as one of the most interesting data points in this study. Session 7 represents the highest level of engagement across all sessions and one of the two highest content acquisition scores. During this session, the student reacted to a line that was read in the mini lesson and made an inappropriate joke about it. Although this event distracted him from the lesson briefly, it clearly resulted in increased engagement and content acquisition in the lesson when compared to previous lessons. Again, this instance clearly demonstrates that this student's engagement (no matter how he is engaged) may predict his learning of content. This is further demonstrated by the drop in both engagement and acquisition in the lesson immediately following session 7.

**Figure 21**

*Student 2 Content Acquisition and Engagement*



**Student 3**

Student 3 was pleasant and followed directions well during lessons; however, he did not appear as enthusiastic to participate in the lessons compared to the other students. He also required the most prompting to answer questions correctly. The teachers informed me that he has been “checked out” of doing work for a while as this study was conducted with only two weeks of school left before summer break. He did not demonstrate or communicate any preference for learning with GNs versus TAIT. Student 3 consistently pointed to the text with his finger as I read but he was not always looking at the text when pointing.

***Content Acquisition and Engagement***

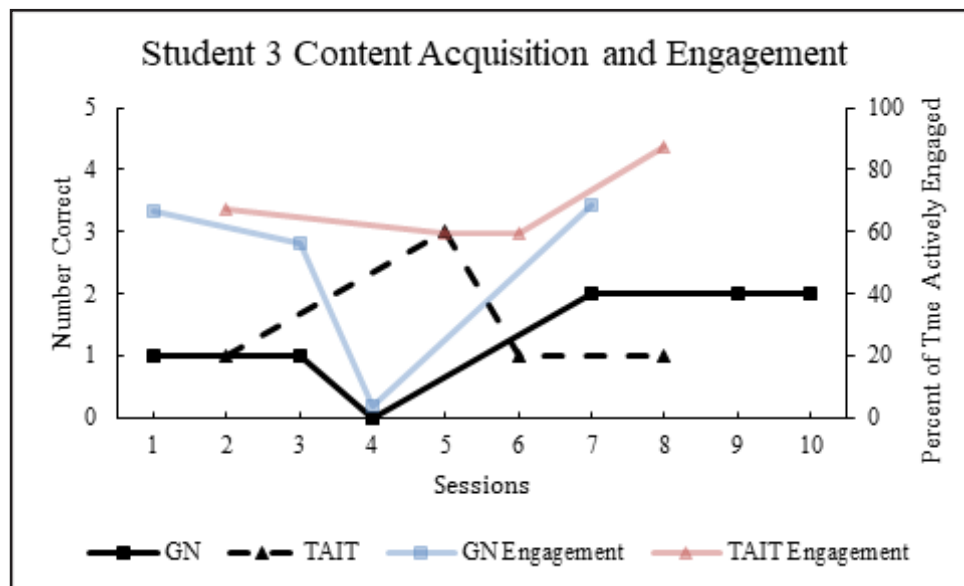
When examining both variables together (see Figure 22), the engagement and acquisition data paths do not appear to track with each other, with the exception of session 4. During session 4, Student 3 scored a 0 on content acquisition and demonstrated almost no active engagement (3.7%). Upon reviewing the video of this session there were two factors that could have contributed to this decrease in performance and engagement. First, this particular lesson was the longest of the graphic novel mini lessons. There were many times when the

student was not looking at the materials and I had to prompt him to refocus. Since the student began the intervention sessions with what I perceived as minimal interest, I believe the length of the lesson negatively impacted his engagement. Second, Student 3 did not have a fidget to hold during this lesson as he did during all other lessons. This session was also the only time throughout the study that an *off task* segment of time was recorded (16.6%). This percentage of time off task also contributed to his low engagement score in this session.

Similar to Student 2, the data for Student 3 further supports that student engagement may predict academic performance. In this case, Student 3 consistently demonstrated low performance scores as well low engagement percentages.

**Figure 22**

*Student 3 Content Acquisition and Engagement*



**Student 4**

Student 4 appeared to be excited to participate in all instructional sessions and required the least amount of teacher support to access materials. He was about to graduate and had to attend activities related to graduation towards the end of the study and was only able to complete seven sessions.

### ***Content Acquisition and Engagement***

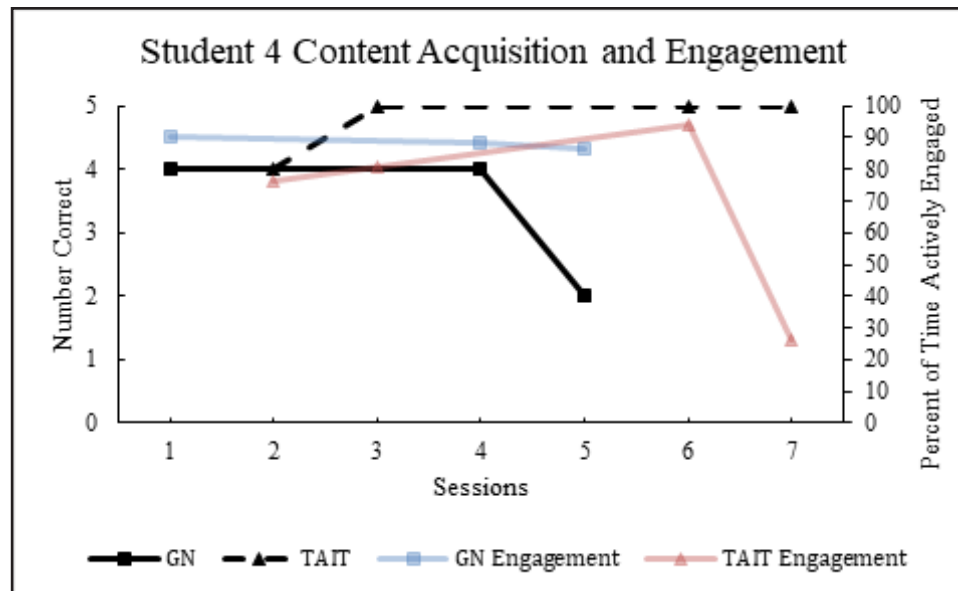
Considering engagement and acquisition together (see Figure 23), it is clear that he had the overall highest content acquisition scores with relatively high engagement scores. It is important to note that from the beginning of the study, Student 4 verbalized his preference for the TAIT condition. When asked why he preferred the TAIT condition, he expressed that they were “better.” It seemed like the pictures and characters may have been distracting for this student. Student 4 was very focused on facts and answering the questions correctly. Sometimes he appeared to enjoy the jokes made in the GNs, but he usually preferred to just be finished with the lesson. The TAIT condition was typically faster, and the information appeared to be more easily digestible for him when presented in this format.

Another important observation to note is that both the GN and TAIT engagement data track closely to the acquisition data path. With the exception of the engagement score during session 7, Student 4 clearly performs better when he is more engaged. During session 7, Student 4 was planning on going to a fun graduation event for seniors after the instructional session. This may have contributed to his low engagement score for this session.

As with all participants in the study, Student 4 also answered more inferential questions (86%) correctly than recall (81%). Because the nature of inferential questions require a student to formulate an answer that is not found directly in the text, questions often require students to recall aspects of their own life (*Applying* questions) which may be easier to retrieve. For example, one *Applying* question from a mini lesson was “A sunk cost is something that stays the same, no matter what. What is something in your life that will always stay the same?”. Although the question pulls from knowledge gained from the lesson, it is possible to answer it without fully grasping the concept of what a *sunk cost* is.

**Figure 23**

*Student 4 Content Acquisition and Engagement*



### **Student and Teacher Perceptions**

As noted previously, to address social validity student and teacher perceptions of the use of GNs to teach social studies content were assessed with separate questionnaires. These findings were consistent with anecdotal observations of participants. Student perceptions were mostly positive with the exception of Student 1 indicating he did not like the GNs. This student was also the only student to indicate that learning about economics was not important to his future. Both teachers' perceptions were all positive for Likert Scale questions and informative for the short answer questions. Both teachers indicated that they thought the use of graphic novels was useful and engaging for their students; however, the feasibility of using GNs in the classroom was a concern.

Teacher responses mirrored previous research on educator perceptions of using graphic novels in the classroom. Lapp and colleagues (2012) found that 67.2% of their samples of 58 elementary teachers rated their students' interest in graphic novels as *high*. Additionally, 75% of respondents indicated that graphic novels are as useful as both a supplemental and motivational tool for students. Although these teachers had overall positive

attitudes towards graphic novels, the authors highlight that the lack of access of educational graphic novels to teachers is problematic. Similarly, both teachers in the current study identified access to educational graphic novels as a barrier.

### **Limitations and Directions for Future Research**

Several limitations should be considered when interpreting the results of this study. First, the number of participants was small. Although this is a common limitation in single case research designs, it limits the generalizability of these findings. Additionally, all participants were White males who had the same two teachers in the same school. These factors greatly contribute to the restricted generalizability of these findings. This study represents results only for the demographics and location of the students described. Although instructional practices used during intervention are well supported by research, the addition of GNs as an instructional tool in special education is largely novel and is not an identified evidence-based intervention. Horner et al. (2005) recommended to be considered evidence-based an intervention must be supported by a minimum of five single case studies that (a) meet the minimal acceptable criteria, (b) are published in peer reviewed journals, (c) are completed by at least three independent research teams, (d) are from three different geographic locations, and (e) taken together, the studies must include at least 20 participants in order to be considered an evidence-based intervention. Therefore, at minimum replication is needed, including replication with students of varying demographics and that take place in different geographic.

Second, limitations related to the study design should be considered. Although optional, including a best alone phase was the initial plan when designing this study. This plan was abandoned mid-intervention due to a lack of clear separation between the two conditions across all students. Because this study was conducted within the last few weeks of the school year, the decision was made to continue intervention in the comparison phase until school ended for summer in an effort to allow more time for separation of data to occur. This additional time in the *comparison* phase did not result in increased separation of data,

however, and the timing of the study could have impacted these results.

Third, we were unable to code a few of the sessions for student engagement. One was due to a positioning issue of the camera, while technology issues impacted two others. The resulting missing data may have been particularly informative for Student 2 (sessions 5 and 10), and additional data may have contributed more to determining a relationship between the GN intervention and level of engagement.

A fourth limitation that should be considered is the materials used during intervention. I made and assembled all instructional materials except the excerpts from the GN condition mini lessons and I did not write the narrative text in the TAIT mini lessons. Creating and assembling the lessons (e.g., creating comprehension questions, creating concept statements, identifying and defining vocabulary words, laminating, binding the lessons) was extremely time consuming and may not be feasible for practitioners given the numerous responsibilities and expectations of special educators in addition to limited planning time. A long-term goal for this work could be to create a virtual library of pre-made, ready to print GN lessons with all of the components and materials stored for easy access. In addition to the amount of time the preparation involved, another limitation in the materials was that the mini lessons were printed in black and white. The books that the GN mini lessons and the narrative text the TAIT lessons were pulled from, *The Cartoon Introduction to Economics Volume One: Microeconomics* and *The Cartoon Introduction to Economics Volume Two: Macroeconomics*, were printed in black and white. To keep the two conditions as similar as possible, the mini lessons in the TAIT condition were also printed in black and white. The only components of the lessons that were printed in color were the vocabulary word cards, title pages, and concept statements. If the lessons were printed in color, it is possible this could also impact engagement. In addition to potential increased engagement, Wichmann et al. (2002) found that using color can also support memory of what has been seen. A final limitation regarding instructional materials was the number of answer choices for comprehension questions. The study was designed to include one correct answer, one



nonsense answer, and one answer that was close to the correct answer, for a total of three choices with picture supports for all answer choices. This format appeared appropriate for Students 1, 2, and 3, but I noticed halfway through the study that Student 4 might have been more appropriately challenged without the picture supports. Future studies should take this into consideration when planning answer choices.

Fifth, the dosage of the intervention could have had an impact on the content acquisition results. Due to the lack of separation of data in the two conditions, ideally, continuing the intervention would be the recommended practice (Ledford & Gast, 2018). However, continuing intervention was not possible due to the school year ending. This resulted in limited exposure to each condition. The dosage of the intervention could also play a role in the prompt levels needed to ensure a correct response. If the students were exposed to more sessions over time, it's possible that it would require fewer prompts to get the student to the correct answer. Future studies should consider increasing the dosage of the intervention.

Sixth, three of the lessons required knowledge of another lesson to understand its content (see Table 4). The dependency of these two lessons on knowledge from other lessons increased the content complexity. All students (except Student 4) scored below their overall mean on both of these lessons on content acquisition. Future studies should ensure all content across mini lessons do not rely on knowledge gained from other lessons.

A final recommendation for future research would be to explore the effects of these interventions when students are given a choice of using GNs or another form of text. Student choice among academic tasks and material has been associated with increased student achievement, reduced time off task, and improved attitude about the task (Kautz et al., 2028; Hudson, 2018). Students 1, 2, and 4 expressed their preferences toward a condition (Students 1 and 2 preferred GN, Student 4 preferred TAIT), and all demonstrated overall higher levels of both content acquisition and engagement during their preferred condition. Investigating student outcomes when a GN is a choice as a mode of instruction could be another way of not only replicating the effects seen in Students 1, 2, and 4, but also simply

to determine the extent to which students generally may prefer GNs when given a choice.

## **Conclusion**

An excellent education in social studies is vital for students to grow into civically competent adults. Conners and Donnellan (1993) proposed that citizenship is “the belief that all members are active participants in society,” including students with ESN. Historically, individuals with disabilities have not experienced citizenship in the same way as their typical peers. Prior to the passage of Public Law 94-142 in 1975, millions of children and youth with disabilities were denied an appropriate education, including many who were denied any education at all. Since the passage of the No Child Left Behind Act ([NCLB], 2002), requiring states to create student learning standards and assessment systems that align with their state’s academic standards, both students and their teachers have experienced higher accountability for learning. Social studies instruction is not only an integral part of a comprehensive education, but inclusive of topics that are common goals that many students, parents, and teachers advocate for students with ESN, such self-determination, advocacy, and citizenship.

Social studies instruction remains the least researched content area for students with ESN (Zakas et al., 2011). With increased expectations of both teachers and their students, including those with ESN, research on how to effectively teach social studies content is needed. This study adds to the literature in that it is the first study to address teaching the subject of economics specifically to students with ESN. Additionally, this study contributes to the limited body of research with high school students with ESN accessing social studies content. The purpose of this study was to compare student outcomes (i.e., economics content acquisition and student engagement) when using GNs or TAIT with high school students with ESN.

Although a superior instructional condition could not be determined, results of this study did reveal several important findings. First, while this study did not demonstrate clear and consistent separation of the two conditions, there were points at which GNs appear

to be associated with higher engagement and content acquisition. These findings at minimum suggest that further investigation of the effects of using GN during instruction with students with ESN is warranted. Additionally, this study appears to demonstrate a clear relationship between the two dependent variables (content acquisition and student engagement); that is, higher engagement appears to be associated with greater content acquisition, which is consistent with previous literature on engagement (Horn, 2023; McLeskey et al., 2019). Moreover, this appeared to be true for each student, regardless of intervention condition. Another finding of this study, although not addressed as a research question, was that text preference appeared to predict both engagement and content acquisition. Unprompted, three students expressed their preference (Students 1, 2, and 3) of lesson format, and each of these students demonstrated higher content acquisition and engagement in their preferred condition.

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## CURRICULUM VITAE

Caroline M. Fitchett  
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### **EDUCATION AND PROFESSIONAL CREDENTIALS**

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#### **Degrees**

M.S.	2020	University of Louisville, Louisville, KY	Teacher Leadership/ Autism
B.A.	2017	University of Louisville, Louisville, KY	Special Education/ Elementary Education

#### **Degree In Progress**

Ph.D.	2023	University of Louisville, Louisville, KY	Curriculum and Instruction
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#### **Previously Held Licenses**

KMS: Professional Certificate for Teaching Exceptional Children, Moderate and Severe Disabilities, Grades Primary Through 12

KEL: Professional Certificate for Teaching In Elementary School, Primary Through Grade 5

### **PROFESSIONAL EXPERIENCES**

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2023	California State University San Bernardino, Department of Special Education, Rehabilitation, and Counseling <i>Assistant Professor (2023)</i>
2017- 2020	Exceptional Children's Teacher (students with moderate/severe intellectual disability), Churchill Park School, Louisville, KY
2017- 2019	Mentor Teacher to Multiple Practicum Students
2017	International Teaching in Belize

## HONORS AND LEADERSHIP

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2019	Selected to introduce Alumni Fellow of the Year in Education at the University of Louisville Alumni Awards Ceremony
2018-2021	Graduate Student Council Department Representative
2018-2019	Graduate Student Ambassador
2017	Delta Zeta Award (for achievement, leadership, and service in the field)
2017	Summa Cum Laude recipient (B.A.)
2016-2017	President of Kappa Delta Pi Academic Honors Society

## PUBLICATIONS

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### Journal Articles

Hott, B., Heiniger, S., **Fitchett, C.**, Justus-McDowell, J., Blasius, V., Le, M., Randolph, K. (in review) A systematic review of rural special education quarterly. *Rural Special Education Quarterly*.

### Journal Articles (In Review)

Long, A. M., Elliott, M., Pollard, J., **Fitchett, C.**, Courtade, G. (2023). *What's Working in Alternative Teacher Preparation? Survey Results for Program Development* [Manuscript submitted for publication]. College of Education and Human Development, University of Louisville.

Hott, B., Heiniger, S., **Fitchett, C.**, Justus, J., Randolph, K., Blasius, V., Machado, N. (2023). *A Systematic Review of Rural Special Education Quarterly*. [Manuscript submitted for publication]. College of Education, University of Oklahoma.

### Book Chapters

Walte, S. **Fitchett, C.**, & Courtade, G. (2022). Using student assessment data, analyzing instructional packages, and making necessary adjustments that improve student outcomes. In R. Pennington, M. J. Ault, G. Courtade, J. M. Jameson, & A. Rupp (Eds), *High leverage practices: Ensuring access for students with extensive support needs*. Routledge.

## PRESENTATIONS

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### National Presentations: Refereed

**Fitchett, C.,** Pollard, J. (2023, March) *Mentoring alternative certification teachers: Teacher candidates' experiences and preferences.* Council for Exceptional Children (CEC), Louisville, Kentucky.

Courtade, G., **Fitchett, C.** (2023, February). *Publishing and reviewing in Rural Special Education Quarterly.* American Council on Rural Special Education (ACRES), Pittsburg, PA.

**Fitchett, C.** (2023, January) *What about social studies for students with ESN? A review of the literature.* International Conference on Autism, Intellectual Disability and Other Developmental Disabilities (DADD). Clearwater, FL.

**Fitchett, C.,** Hott, B., Courtade, G., Boveda, M. (2022, November) *Special education journals: Who is publishing and who is reviewing?* Council of Exceptional Children, Teacher Education Division (TED), Richmond, VA.

Courtade, G., Ault, M., **Fitchett, C.** (2022, March) *Publishing in and reviewing for rural special education quarterly.* American Council on Rural Special Education (ACRES). Myrtle Beach, South Carolina.

**Fitchett, C.,** Heiniger, S., Webster, F. (2022, March) *Rural special education quarterly: A review of publications and author Data over the last decade.* American Council on Rural Special Education (ACRES), Myrtle Beach, South Carolina.

**Fitchett, C.,** Elliott, M., Pollard, J. (2022, March) *What's working in an ATP program? Survey results and next steps for program development.* American Council on Rural Special Education (ACRES), Myrtle Beach, South Carolina.

Courtade, G., Wakeman, S., Jimenez, B., **Fitchett, C.,** & Taber Doughty, T. (2022, January). *Developing, planning for, and using assessment data for students with ESN: HLPs for assessment.* International Conference on Autism, Intellectual Disability and Other Developmental Disabilities (DADD). Clearwater, FL.

Courtade, G., Elliot, M., Long, A., **Fitchett, C.,** Pollard, J. (2022, Jan.16) *Ready or not? feedback from teachers of students with ESN in an alternative teacher preparation program on their preparedness for implementing HLPs.* Council for Exceptional Children (CEC), Orlando, Florida.

Hott, B., Courtade, G., & **Fitchett, C.** (2022, Jan.16) *Special education journals: Who is publishing and who is reviewing?* Council for Exceptional Children (CEC), Orlando, Florida.

Landrum, T., Page, D., **Fitchett, C.** (2021, Nov.3) *Building relationships with evidence-based behavioral interventions: Guidelines for teacher educators.* Teacher Education Division (TED), Fort Worth, Texas.

Heiniger, S., **Fitchett, C.**, & Webster, F. (2021, Nov. 3) *Single case research design: Guidelines and training advancements.* Teacher Education Division (TED), Fort Worth, Texas.

**Fitchett, C.**, Courtade, G., & Hott, B. (2021, November). *Special education journals: Who is publishing and who is reviewing?* Annual Conference of the Teacher Education Division (CEC) Conference. Fort Worth, TX.

### **State and Regional Presentations: Refereed**

Courtade, G., **Fitchett, C.** (2022, November) *Reviewing and Publishing in Rural Special Education Quarterly (RSEQ).* Ohio Center for Autism and Low Incidence (OCALI). Regional Conference, Virtual.

Elliott, M., Long, A., **Fitchett, C.**, Pollard, J. (2022, April 29) *What's working in an ATP program? Survey results and next steps for program development: HLPs, cultural competencies, & more.* KEEP Kentucky Excellence in Educator Preparation (KEEP) Summit. State Conference, Virtual.

Courtade, G., Hott, B., Berry, A., & **Fitchett, C.** (2021, Nov. 18) *Rural special education quarterly: Discussion of issues facing rural special educators.* Ohio Center for Autism and Low Incidence (OCALI). Regional Conference, Virtual.

**Fitchett, C.**, Courtade, G., Walte, S. (2021, Sept. 25) *Progress monitoring and high leverage practices for students with extensive support needs.* Kentucky Association for Teacher Educators (KATE). State Conference, Virtual.

**Fitchett, C.** (2021, April 24) *Virtual structured literacy instruction for students with intellectual disabilities.* Kentucky Excellence in Educator Preparation (KEEP) Summit. State Conference, Virtual.

**Fitchett, C., & Delano, M. (2018).** *Making it meaningful: Shared reading strategies for students with autism spectrum disorder and low incidence disabilities.* Kentucky Excellence in Educator Preparation (KEEP) Summit. State Conference, Lexington, KY.

**Fitchett, C., & Delano, M. (2018).** *Making it meaningful: Shared reading strategies for students with autism spectrum disorder and low incidence disabilities.* Ohio Center for Autism and Low Incidence (OCALI). Regional Conference, Columbus, Ohio

**Fitchett, C., & Delano, M. (2018).** *Making it meaningful: Shared reading strategies for students with autism spectrum disorder and low incidence disabilities.* Graduate Student Regional Research Conference, Louisville, KY.

## **SERVICE TO THE PROFESSION**

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### **Professional Organization Memberships**

- 2020-Present American Council on Rural Special Education (ACRES)  
Ad-hoc Board Member as RSEQ Managing Editor (2020-present)
- 2019-Present Council for Exceptional Children (CEC), Division on Autism and Developmental Disabilities (DADD)
- 2018-Present Council for Exceptional Children (CEC), Teacher Education Division (TED)
- 2018-Present Council for Exceptional Children (CEC)

### **Editorial Work**

#### **EDITORIAL BOARD MEMBERSHIP**

- 2021-Present *Rural Special Education Quarterly*, Managing Editor

#### **REVIEWER**

- 2023 Education and Training in Autism and Developmental Disabilities (ETADD)
- 2023 Research and Practice for Persons with Severe Disabilities (RPSD)

### **Other Service Activities**

- 2022 CEC-DR Doctoral Student Scholars' Seminar Nominee (not selected)
- 2021 Nominee for Student Division on Autism and Developmental Disabilities (DADD) Representative Candidate (not elected)



2021-Present *Rural Special Education Quarterly*- Managing Editor  
 2020-Present Alternation Certification Special Education Teacher Mentor  
 2020 - 2022 Graduate Student Ambassador  
 2019 - 2022 Graduate Student Council Department Representative  
 Research Grant Awarding Committee  
 Conference Planning Committee

## **TEACHING**

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### **California State University San Bernardino**

Fall 2023	ESPE 6662	Methods for Students with Extensive Support Needs I
Fall 2023	ESPE 6632	Supportive Learning Environments (2 Sections)
Spring 2024	ESPE 6663	Methods for Students with Extensive Support Needs II
Spring 2024	ESPE 6632	Supportive Learning Environments (2 Sections)

### **University of Louisville**

Spring 2023	EDSP 611/440	Curriculum and Methods II: Moderate/Severe Disabilities
Fall 2022	EDSP 395	Autism: Science, Identity, and Culture

### **Co-Teaching**

Spring 2022	EDSP 611/440	Curriculum and Methods II: Moderate/Severe Disabilities
Fall 2021	EDSP 520	Assessment of Students with Moderate/Severe Disabilities
Fall 2020	EDSP 260	Classroom Behavior Management

### **Guest Lectures**

August, 2022. *Professional doctoral seminar*: Guest lecture for first year doctoral students- taught by Brittany Hott, University of Oklahoma.