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MAKING THE INVISIBLE VISIBLE: AN EXPLORATORY MIXED METHODS  
ANALYSIS OF IDEA GENERATION PROCESSES AND WRITING OUTCOMES  
FOR STUDENTS WITH AND WITHOUT HIGH-INCIDENCE DISABILITIES

by

Reagan D Murnan  
A Dissertation  
Submitted to the  
Graduate Faculty  
of  
George Mason University  
in Partial Fulfillment of  
The Requirements for the Degree  
of  
Doctor of Philosophy  
Education

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George Mason University  
Fairfax, VA

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Generation Processes and Writing Outcomes for Students with and without High-  
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## **Dedication**

This dissertation is dedicated first to God, in which through Him all things are possible. It is also dedicated to my children, Christopher, Luke, and Brooks, and to my children who I have yet to meet, both in this life and in the next. This work is also dedicated to my husband, Lance, who offers endless encouragement and grounding. I also dedicate this work to my mom and dad. Thank you for always believing in me. I am truly a witness to the power of your prayers and your many mass offerings. Lastly, glory be to God for all things. None of this would have been possible without Jesus Christ, my savior.

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## List of Abbreviations

Attention Deficit Hyperactive Disorder .....	ADHD
American College Test .....	ACT
Autism Spectrum Disorder .....	ASD
Common Core State Standards .....	CCSS
Emotional and Behavioral Disorder.....	EBD
English Learner .....	EL
High-Incidence Disability .....	HID
Individualized Education Plan .....	IEP
Institutional Review Board .....	IRB
Learning Disability .....	LD
National Assessment of Education Progress.....	NAEP
Other Health Impairment .....	OHI
Scholastic Achievement Test.....	SAT
Self-Regulated Strategy Development.....	SRSD
Autism Spectrum Disorder .....	ASD
Technology-Based Graphic Organizer .....	TBGO
Think Aloud.....	TA
Universal Design for Learning.....	UDL
US Department of Education Office of Special Education .....	OSEP
Woodcock-Johnson Writing Fluency .....	W-J III

## **Abstract**

### **MAKING THE INVISIBLE VISIBLE: AN EXPLORATORY MIXED METHODS ANALYSIS OF IDEA GENERATION PROCESSES AND WRITING OUTCOMES FOR STUDENTS WITH AND WITHOUT HIGH-INCIDENCE DISABILITIES**

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George Mason University, 2023

Dissertation Director: Anna Evmenova, Ph.D.

The genre of persuasive writing requires writers to independently probe their long-term memory to generate pertinent ideas that support their opinion on a given topic. However, many students with high-incidence disabilities struggle with the complex synergy of tasks involved in writing, and in particular generating ideas. A qualitatively dominant mixed methods study explored and compared the idea generation processes and writing outcomes of eighth grade students with high incidence disabilities and proficient writers. Students with high-incidence disabilities and proficient writers engaged in a think aloud protocol during “pretest,” sharing idea generation processes, while simultaneously composing an essay in response to an opinion-based persuasive writing prompt without any supports. Both groups then received instructional lessons on the use of the technology-based graphic organizer (TBGO) with built-in evidence-based strategies. Students then engaged in a second think aloud with identical data collection procedures

to “pretest” but using the TBGO as they were writing. Finally, a third think aloud was conducted when the TBGO was removed, where both groups participated in a final think aloud that again captured idea generation processes while composing another essay. The use of a think aloud was used to glean qualitative data of the idea generation processes employed when responding to an opinion-based persuasive writing prompt while writing outcomes (number of ideas generated, total number of written words, writing quality) were concurrently collected. The findings of this study revealed that both students with high-incidence disabilities and proficient writers generate ideas through personal experiences in all writing contexts. Proficient writers demonstrated more complex idea generation processes, as they generated ideas by employing strategy use, using organizational strategies, and by simply pausing to think. The use of the TBGO enhanced the idea generation processes of students with high-incidence disabilities, as these students less frequently exhibited idleness of their idea generation processes and were more likely to engage in multiple idea generation processes with the tool. However, results demonstrated that students with high-incidence disabilities likely require more explicit instruction related to the generation of ideas. Additionally, quantitative results demonstrated that the use of the (TBGO) resulted in a statistically significant difference in the number of ideas generated, the total number of written words, and writing quality for students with high-incidence disabilities when writing with and without the TBGO. Yet only the number of ideas generated, and the writing quality measures improved significantly for proficient writers. A mixed analysis was used to quantize the frequency of the emergent qualitative themes.

## Chapter One

Writing is indispensable for all students to demonstrate their knowledge and skills on a variety of tasks, such as school assignments, reports, and high stakes assessments, as well as future undertakings, such as the development of resumes and college entrance applications (Villarroel et al., 2019). Writing goes beyond the physical act of putting a pen to paper, but rather is a complex set of skills that requires a synergy of strategic actions and higher-order thinking (Bazerman et al., 2017; Bruning & Kauffman, 2016). These strategic actions are historically less polished for students with high-incidence disabilities compared to their typically developing peers (Foxworth et al., 2019; Graham et al., 2017a; Lee & Paz, 2021).

More specifically, Graham and colleagues (2015) characterized this complex array of skills into the subskills of planning, idea generation, revising, and editing, which are notably different for students with high-incidence disabilities compared to their typically developing peers (Graham et al., 2017a). As such, this complex set of skills is even more pronounced as students are required to intersect the aforementioned skills (planning, idea generation, revision, editing) with genre-specific writing demands, and most notably, the genre of opinion-based persuasive writing. This genre requires writers to present their opinion in response to a prompt with the intention of changing the reader's point of view or affecting the reader's actions (Jonsen et al., 2018).

## **Idea Generation for Persuasive Writing**

Opinion-based persuasive writing is a unique genre, which differs from other forms of argumentative writing. Most notably, is the nature of asserting an opinion, selecting the most favorable evidence, and appealing to emotions to convince a reader to take on the disposition of the writer, whereas argumentative writing appeals to logic through the assertion of claims with evidence, warrants, and rebuttals (Hillocks, 2011; Jonsen et al., 2018). A number of interventions, specific to the genre of opinion-based persuasive writing, such as Self-Regulated Strategy Development (e.g., Harris et al., 2019), graphic organizers (e.g., technology-based graphic organizers; see Evmenova et al., 2016), elaborated goals (e.g., Ferretti & Lewis, 2019), and peer review (e.g., Cramer & Mason, 2014), have demonstrated statistically significant or very effective positive effects on writing outcomes for students high-incidence disabilities and proficient writers. While the aforementioned interventions provide structures for the organization of ideas, such as mnemonic devices, scaffolds to aid the transition of ideas into sentences, genre-specific goals (e.g., to include an opinion), none explicitly teach the generation of ideas or offer supports for activating the generation of ideas.

In sum, the interventions specific to the genre of persuasive writing offer support for including the necessary genre-elements, however, they lack in explicitly teaching or explicitly supporting students in idea generation. Consequently, there are a limited number of studies pertaining to idea generation in writing (e.g., Berninger et al., 2009; Breuer, 2012; Crossley et al., 2016; Van den Bergh & Rijlaarsdam, 2007). Of these studies, none involve supporting secondary students in the genre of persuasive writing

relative to the generation of ideas when given a persuasive opinion-based writing prompt. Since idea generation, or the explicit and effortful process of searching long-term memory for ideas, is a fundamental aspect of writing (Chen et al., 2016), it is imperative that writing strategies and interventions consider how to probe long-term memory for the generation of ideas.

The generation of ideas becomes ever more imperative within the genre of opinion-based persuasive writing, as the focus of the genre is not centered on background knowledge related to a certain topic area or the retrieval of facts, but rather requires the writer to independently probe their long-term memory to generate pertinent ideas that support their opinion on a given topic (Hayes & Berninger, 2014). Writers with ample knowledge in long-term memory (e.g., facts, language skills, discourse schema) about the prompt they are writing about, produce written products of higher quality and with more speed and less effort than writers with poorer long-term memory (Fayol et al., 2012). Yet, such interventions cannot seemingly be conceptualized until idea generation processes are identified and understood. That said, to date, it appears the field has yet to explore or uncover the idea generation thought processes of middle school students that could have the potential to provide insight into effective strategy instruction for the generation of ideas, which could ultimately produce persuasive written products of higher quantity and quality (Crossley, 2016; Ferretti & Lewis, 2019; Weston et al., 2011). Further, because writing is developmental and flexible, insight into idea generation thought processes can allow for teaching practices to go beyond a narrow and prescribed process for writing to instruction that considers individual differences of writers (Sharp, 2016). Additionally, it

is likely that proficient writers have a more developed idea generation acumen than students with high-disabilities or struggling writers given their ability to mitigate the demands of the writing process (Eysenck & Keane, 2020). Thus, making such processes visible can provide less skilled writers with assistance in applying idea generation strategies that would seemingly have a beneficial effect for both students with high-incidence disabilities and average writers (MacArthur & Graham, 2016).

### **Statement of the Problem**

A high-incidence disability (or higher prevalence disability) is defined as the most prevalent among children with disabilities in U.S. schools and typically includes students with emotional and/or behavioral disorders (E/BD), learning disabilities (LD), and mild intellectual disability (MID). This category has expanded in the last decade to include youth with other disabilities, including Autism Spectrum Disorder (ASD), attention-deficit hyperactivity disorder (ADHD), which accounts for a large percentage of students identified as having other health impairment (OHI), and speech and language impairment (SLI), as such disabilities are now being identified at higher rates (Hallahan et al., 2020; Stichter et al., 2008). The most recent Annual Report to Congress on the Individuals with Disabilities Act (IDEA) noted that 9.5 percent of students aged six through 21 were served under IDEA, with specific learning disability being the most prevalent disability category at 37.7 percent (U.S. Department of Education, 2018). Although students within each defined disability category (e.g., LD, E/BD) are individually assessed and provided with an individualized education program (IEP) and educational and related services in the least restrictive environment in accordance with the Individuals with Disabilities Act

of 2004 (IDEA, 2004), this population of students generally receives some level of instruction in the general education setting with their typical peers (McLeskey et al., 2011; 2014).

These statistics are particularly meaningful when reflecting on the present systemic issues of overrepresentation of students of color in special education (Cavendish et al., 2020). To date, there is large debate regarding whether students of color are overrepresented in special education by means of systemic bias (U.S. Department of Education, 2015). Data suggest that Black-and Hispanic-White school district risk ratios are strongly associated with Black-and Hispanic-White district achievement gaps (Farkas et al., 2020). As such using district-level data, Farkas and colleagues found that overrepresentation of non-White students in special education is largely explained by their greater likelihood of experiencing academic difficulties. That is, when controlling for group differences in achievement, students of color may be underrepresented in special education. These findings are consistent with previous research demonstrating that children of color are significantly less likely than academically similar White children to qualify for and receive special education services (Morgan et al., 2017; 2018). While data appear to be somewhat conflicting, it is imperative to regard the special education statistics with a degree of skepticism surrounding the qualification of culturally and linguistically diverse students in special education.

As such, both students with and without disabilities are expected to demonstrate proficiency in several academic skills, including writing. However, students with high-incidence disabilities generally differ from their typical peers on every writing outcome,

including written text (quality, organization, voice, ideation, and output), text production skills (sentence fluency and conventions including handwriting, spelling, and grammar), knowledge about writing (knowledge of writing represented in genre elements and vocabulary in text), and motivation to write (Graham et al., 2017a; Graham et al., 2018). Consequently, students with high-incidence disabilities face writing challenges due to the poor knowledge they possess about how to write essays, in particular persuasive essays, the lack of understanding of writing expectations, insufficient time spent planning or no time planning, and impoverished text production, such as organization, structural elements, and ideas (Graham et al., 2013).

It is clear that several aspects of writing need to be enhanced for students with high-incidence disabilities to become skilled writers, including increased knowledge of genre specific elements and vocabulary, increased related and significant content, adherence to a centralized topic or prompt, and summarization (Graham et al., 2017a; Wilson, 2017). Researchers posited that instructional practices and interventions focused on explicitly teaching the elements of idea generation including quantity and relevance has the potential to increase both genre specific text and motivation, including writing self-efficacy (Crossley, 2016; Ferretti & Lewis, 2019; MacArthur & Graham, 2016).

The field has developed comprehensive writing models, addressing the various and sophisticated components of writing, including idea generation (Flower & Hayes, 1980; Hayes, 2012), and interventions on the organization of ideas or the organization of ideas that correspond to genre elements (e.g., SRSD, mnemonics, technology-based graphic organizers), evidence-based practices for writing (e.g., SRSD, prewriting,

assistive technology, teacher modeling). While the field has exerted efforts to improve the writing outcomes of all students, the field has yet to develop interventions focused on explicitly teaching strategies centered on how students are to probe their long-term memory for relevant and significant ideas that support an asserted opinion (see Chapter 2). In other words, the paucity of idea generation interventions is potentially due to the field's scarce understanding of the thought processes that are involved in and associated with the generation of ideas (Sharp, 2016). The understanding of such processes would be the antecedent to the development of any intervention or strategy instruction. It is therefore the responsibility of the field to first garner an understanding for the thought processes evoked during ideation before offering and examining an intervention.

### ***Idea Generation***

While idea generation is a facet of brainstorming, the two terms differ in procedures and purpose. Idea generation is defined as an intentional and effortful process involving a writer strategically and deliberately searching for ideas and probing their memory for ideas (Bereiter & Scardamalia, 1987; Flower & Hayes, 1980). Alternatively, brainstorming involves the interweaving and alternation of input (such as reading or generating ideas) and output (such as writing; Hayes, 2000) and reviewing and revising ideas (Berninger et al., 2009).

Many writers, especially those with high-incidence disabilities, experience difficulty generating ideas (Graham et al., 2017a; Kauffman & Landrum, 2018). According to several writing models, this is because students with high-incidence disabilities' working memory is too consumed with lower-order linguistic and text

production processes, such as transcription and relevant vocabulary retrieval (Limpo & Alves, 2013; McCutchen, 2011), at the expense of higher-order processes like planning and organizing ideas, auditing the salience of ideas, and considering the rhetorical elements of the genre (Magnifico, 2010; Singh et al., 2018).

Proficient writers typically have automated such lower-order cognitive processes, thus allotting their working memory resources to the higher-order processes (Eysenck & Keane, 2020). While there is evidence that suggests the role working memory plays in the generation of ideas, there is a substantial body of literature that recognizes that writing interventions can help students focus their attention on a particular area of writing difficulty to mitigate certain demands of the writing process (Graham et al., 2012; Graham & Perin, 2007; Kang et al., 2016). Thus, it would be advantageous to consider interventions that focus on the generation of ideas for writing.

Students must be trained to recognize appropriate planning strategies, particularly the generation of relevant and salient ideas, given the individual writing task and audience, with consideration of their own personal planning styles and preferences (Breuer, 2019; Hauth et al., 2013). Graham and colleagues (2017a) noted in their recent meta-analysis that students with learning disabilities demonstrated lower levels of performance than their typically achieving peers on every aspect of writing assessed, including planning, ideation, organization, and genre elements, with ideation being especially problematic. Strategy instruction, and particularly those focusing on the catalytic phase of the writing process (e.g., brainstorming, planning), is vital for students to demonstrate proficiency in writing tasks. For example, outlining (Hung & Van, 2018)

and the use of graphic organizers (Ciullo & Reutebuch, 2013) have demonstrated significant improvements in writing outcomes for students. However, such supports do not explicitly involve the generation of ideas or how to probe or activate idea generation processes, which is a vital part of the writing process.

Most notably, the pivotal work conducted by Bereiter and Scardamalia (1987) illustrated the difficulty that students with and without disabilities encounter with generating ideas and content using writing as a medium compared to oral communication. In essence, this work demonstrated that *immature* writers engage in a knowledge-telling process for writing – simply recalling ideas from memory – whereas *mature* writers engage in a knowledge-transforming process – creating plans and problem solving to generate and organize ideas.

Additionally, Flower and Hayes (1980) describe idea generation as an aspect of planning, in which the writer negotiates what they plan-to-do and plan-to-say, which can often be stifled by the parameters of the writing assignment or genre. Drawing on the work of Bereiter and Scardamalia (1987) and Flower and Hayes (1980), Crossley and colleagues (2016) have defined idea generation as a distinct and effortful process that is characterized by writers strategically and deliberately probing their long-term memory in search for ideas. When individuals converse, they are prompted by cues and feedback, which can instigate a response. These stimuli are not present in the act of writing, requiring the individual to independently trigger cogitation. Furthermore, Bereiter and Scardamalia (1987), Flower and Hayes (1980), and Crossley and colleagues (2016) asserted that the ability to persist in ideation without a conversational partner is a critical

component of the skills required for proficient composing, and inherently important given the dialogic nature of persuasive discourse.

While writing research has demonstrated the importance of planning in the writing process (Graham & Perin, 2007; Hayes & Flower, 1980; Limpo & Alves, 2018), and that supportive procedures (e.g., strategy instruction) can help to diminish cognitive demands of inexperienced or less proficient writers (De Silva & Graham, 2015), what appears less emphasized in the research is the activation of ideation or strategy instruction centered on generating ideas within the planning phase of the writing process.

### **Background of the Problem**

Writing is not only a demanding and complex assortment of tasks (Bazerman et al., 2017), but specific genres, and in particular, the genre of opinion-based persuasive writing, may further intensify the difficulty of skill acquisition (Hayes & Berninger, 2014). The genre of opinion-based persuasive writing involves higher-level thinking skills, such as organizational markers, transitions, and conceptual relations across sentences, which are more difficult to master than other genres (Stapleton & Wu, 2015; Uccelli et al., 2012). More specifically, the general subskills necessary for proficient writing (e.g., planning, idea generation, revising, and editing) combined with the essay components specific to the genre of persuasive writing have been noted as challenging for students to understand and produce (Balta, 2018; Gillespie et al., 2013; Kauffman & Landrum, 2018). It is plausible that this is partly due to the dual thinking that is necessary for persuasion, in which the writer must not only consider their own opinion and

perspectives, but the attitudes and viewpoints of others as well (De La Paz et al., 2014; Wissinger & De La Paz, 2016).

### ***Technology for Writing***

Successful writing in today's classrooms continues to demand the ability for students to express their ideas digitally. These digital writing environments mandate additional skills beyond typing competence. The Common Core State Standards (CCSS, 2012) requires students to use digital tools to produce and publish writing, and to use digital tools for reading, writing, and communicating. The use of digital tools as a medium for communication and expression is not merely a preference but rather a requirement, emphasizing that digital tools are not supplementary but obligatory. Given the increased emphasis nationwide for teachers to leverage technology and the increased role of technology in written communication, it is important that students gain access to technology-based tools to gain the necessary 21st century skills needed to be effective communicators of expressive language.

The use of graphic organizers, a visual and graphic display that depicts the logic and relationships between facts, terms, and/or ideas within a learning task, demonstrates one of the strongest research bases in impacting student writing performance (Dexter & Hughes, 2011). The use of a graphic organizer as a tool for writing helps students visually record ideas and information in a logical and organized manner. As students record their ideas, they can visually see the connections of concepts, ideas, and essay elements (Ciullo & Reutebuch, 2013). Evmenova and colleagues (2016) developed a technology-based graphic organizer (TBGO) that has demonstrated a positive effect on

writing quality and quantity, especially in the genre of opinion-based persuasive writing, for students grades three through 12 with and without disabilities (Boykin et al., 2019; Brady et al., 2021; Evmenova et al., 2016, 2020; Regan et al., 2017, 2021).

Relatedly, while the use of the TBGO has been validated as an intervention that improves writing outcomes for both students with high-incidence disabilities and proficient writers (e.g., Boykin et al., 2019; Brady et al., 2021; Evmenova et al., 2016), the tool largely focuses on scaffolding the organization of ideas that correspond with writing quality (e.g., identify an opinion, provide reasons, explain why or say more, summarize). To shed light on effective practices for inciting ideas when given an opinion-based persuasive writing prompt, the thought processes of students that are not able to be seen, must be made visible. In doing so, the disclosed thought processes of how students with high-incidence disabilities and proficient writers generate ideas, and how different populations of students (e.g., students with high-incidence disabilities and proficient writers) interact with the tool, would presumably allow the field to develop interventions surrounding idea generation, which is considered a vital component to the writing process (Crossley et al., 2016).

### **Significance of the Problem**

A focus on persuasive writing is important because of the frequent use of persuasive writing measures for high stakes testing and alignments with state curricula. Furthermore, these assessment procedures are aligned with the Common Core State Standards (CCSS, 2010) and college entrance exams, such as the Scholastic Achievement Test (SAT) and American College Test (ACT), making persuasive writing achievement a

pivotal component of later academic success according to these measures. Additionally, the purpose of opinion-based persuasive writing aims to provide socially and culturally relevant prompts (e.g., arguing for a late bedtime, advocating for certain school rules) that permit each student an equal opportunity to record their response adequately. Writers can employ a variety of methods to retrieve and generate ideas, including prompts provided by a reading assignment or instructional video, the development of new ideas as ideas are being translated into print during the writing process, during the revision process (Graham & Sandmel, 2011). However, the unique nature of the opinion-based persuasive genre does not examine a regurgitation of evidence or facts brought forth from a particular reading, text, or instructional video, but rather mandates that students investigate their own long-term memories to generate salient and relevant ideas that support their opinion on a given prompt.

The Common Core State Standards Initiative (CCSS, 2012) emphasizes writing across the curriculum, asserting that students express ideas in a variety of formats. However, based on the most recent NAEP report (National Center for Education Statistics, 2017), only 28% of fourth graders and 27% of eighth- and twelfth-grade students are writing at or above the *proficient level*. This statistic is even more critical for students with high-incidence disabilities, in which only one out of 20 are identified as having attained adequate writing skills (Graham & Hebert, 2011). Unfortunately, such statistics are supported by the preponderance of research that demonstrates the significant differences between students with high-incidence disabilities and their typically developing peers on all aspects of writing (Graham et al., 2017a). Additional literature

continues to support this finding; many students with high-incidence disabilities experience difficulty generating text (Gillespie & Graham, 2014), maintain difficulty with the cognitive or text-specific genre aspects of writing language, including working memory and knowledge of different writing topics (Swanson et al., 2013).

Policy shifts have acknowledged a greater emphasis on inclusion, especially for students with high-incidence disabilities into the general education curriculum with their typically developing peers. Yet students with high-incidence disabilities continue to lag behind their typically developing peers in their academic performance (Gage et al., 2017), especially in the area of writing, which is often acknowledged as a key area of academic concern and is a foundational skill in academic standards (Magyar & Pandolfi, 2012). As such, these writing deficits not only affect the general academic achievement of students with high-incidence disabilities, but they also impede the development of necessary life skills due the inherent nature of writing in many daily activities (National Commission on Writing, 2006). Nonetheless, there are evidence-based practices and researched instructional approaches that support adolescents with high-incidence disabilities' and proficient writers' writing performance; however, while such practices contain an infrastructure to support the organization of ideas, they lack elements to invoke the generation of ideas.

Graham and colleagues (2017a) demonstrated that students with high-incidence disabilities scored lower on every writing outcome than their non-disabled counterparts (i.e., writing quality, organization, vocabulary, sentence fluency, conventions of spelling, grammar, and handwriting, genre elements, output, and motivation). Yet, the above

statistics from the most recent NAEP report suggest that most students, even those without high-incidence disabilities, struggle to write effectively. It is hypothesized that this may be in large part due to the lack of explicit instruction focusing on how students can adequately and effectively generate ideas. Needless to say, all students, regardless of an identified disability, require more effective writing instructional practices centered on the generation of ideas. However, to do so, the field must first understand what thought processes occur as students generate ideas. Graham and colleagues (2017a) demonstrated that there were differences on every writing outcome for students with and without disabilities. However, what is not known is how these students differed in their thought processes. Comparing the thought processes of students with high-incidence disabilities, who have demonstrated meager writing outcomes, with proficient writers, would seemingly allow the field to understand where and how preceding writing outcomes differ. Could their thought processes contribute to the differences in writing outcomes? As such, the “in-the-head” thought processes need to be made visible to evaluate differences.

### **The Current Study**

Idea generation is a key component of most major theories of writing; existing cognitive models of writing recognize that the quality of a written product can be correlated to the number and types of ideas generated (Bereiter & Scardamalia, 1987; Johnson, 2017). However, few studies have quantified the generation of ideas within a writing sample or have linked idea generation in writing samples to assessments of persuasive writing quality (e.g., Beauvais et al., 2011; Crossley et al., 2016), with not a

single identified study found that examined the idea generation processes of students. Additionally, a validated writing intervention (TBGO; see Evmenova et al., 2016) was used in the current study as an avenue for exploring idea generation to examine if idea generation processes vary before and after the use of the intervention.

Further, this study investigated if the use of the TBGO as a writing environment might improve idea generation for some students (e.g., proficient writers), while other students (e.g., students with high-incidence disabilities) might require additional supports for idea generation that are not included within the TBGO (or other similar writing supports and interventions). Thus, the goal of this study was to examine the idea generation processes of middle school students with high-incidence disabilities and proficient writers as they engage in a validated intervention, the number of ideas comparatively, and how these ideas impact the overall persuasive quality comparatively.

Collectively, such an approach offers support for the inclusion of idea generation as a component of cognitive writing models as well as contributes a better understanding to what MacArthur and Graham (2016) considered an in-the-head phenomena by making them visible. This unveiling helps answer the question of which procedures have been effective for middle school students with high-incidence disabilities and proficient writers, as well as provides teachers with an avenue for strategy instruction and modeling based on the unveiled thought processes of the proficient writers. Lastly, the use of think aloud procedures to “view” and compare the idea generation thought processes of proficient writers and those with high-incidence disabilities will provide a better

understanding of how elements of idea generation interact with persuasive writing quality.

### **Research Questions**

The purpose of this study was to use a mixed methods comparative case study analysis to unveil and compare the idea generation processes and the writing outcomes produced through the think alouds of eighth students with high-incidence disabilities and proficient writers using think aloud procedures. This study was guided by the following research questions:

*Research Question 1:* How do middle school students with high-incidence disabilities and proficient writers generate ideas when given a persuasive writing prompt?

*Research Question 2:* To what extent does the use of the TBGO change the idea generation processes for middle school students with high-incidence disabilities and proficient when given a persuasive writing prompt?

*Research Question 3* To what extent do middle school students with high-incidence disabilities differ in the number of ideas generated, the total number of written words, and writing quality when given a persuasive writing prompt when writing with and without the TBGO?

*Research Question 4:* To what extent do middle school proficient writers differ in the number of ideas generated, the total number of written words, and writing quality when given a persuasive writing prompt when writing with and without the TBGO?

*Research Question 5:* To what extent do middle school students with high-incidence disabilities and proficient writers differ in their idea generation processes in

relation to the number of ideas generated when given a persuasive writing prompt when writing with and without the TBGO?

### **Definition of Terms**

The following terms were used throughout this research study:

***Coding*** – in qualitative data analysis, the assignment of simple words or short phrases to capture the meaning of a larger portion of (the original) textual or visual data. Whether or not supported by computer software, the analyst must make the coding decisions for every item, including what to code and how (Yin, 2016).

***Concurrent Mixed Methods Sampling*** – the use of a single sample of participants where qualitative and quantitative data is collected simultaneously but not necessarily at a single point in time (Creamer, 2017).

***Descriptive Statistics*** – brief descriptive coefficients that summarize a given data set and are broken down into measures of central tendency and measures of variability. Measures of central tendency include the mean, median, and mode, while measures of variability include standard deviation, variance, minimum and maximum variables, kurtosis, and skewness.

***Graphic Organizers*** – a visual and graphic display that depicts the logic and relationships between facts, terms, and/or ideas within a learning task.

***High-Incidence Disability (HID)*** – emotional or behavioral disorders, mild to moderate intellectual disabilities, LD, speech and language impairments, and more recently based on the increasing numbers, autism can be considered a high incidence disability (Gage et al., 2012).

***Identical Sampling*** – the same sample members participate in both the qualitative and quantitative phases of the study (Onwuegbuzie & Collins, 2007).

***Idea Generation*** - a distinct and effortful process that is characterized by writers strategically and deliberately probing their long-term memory in search for ideas. It is the creative process of creating, developing, and communicating abstract, concrete, or visual ideas.

***Middle School Student*** – the period in a student's life that takes place after elementary school and before high school. Typically, the middle school grades are 6th, 7th, and 8th grade. The current study involved eighth grade students.

***Nonparametric Statistics*** – nonparametric statistics does not assume that data is drawn from a normal distribution. Nonparametric statistics includes nonparametric descriptive statistics, statistical models, inference, and statistical tests.

***Opinion-Based Persuasive Genre*** – writers present their opinions in response to a prompt with the intention of changing the reader's point of view or affecting the reader's actions (NCES, 2012).

***Proficient Writers*** – writers who typically have automated lower-order cognitive processes, such as transcription and relevant vocabulary retrieval, and are advanced in the production of clear and coherent writing, in which the development, organization, and style are appropriate to task, purpose, and audience (Common Core, 2012).

***Technology-Based Graphic Organizer (TBGO)*** – a web application, which includes a table-to-text graphic organizer to scaffold the writing process, a mnemonic, IDEAS, to guide persuasive essay composition, self-regulated learning strategies (e.g., goal setting,

self-instruction, self-monitoring, self-evaluation), Universal Design for Learning (UDL) supports (e.g., audio comments, text hints, text-to-speech), video models to introduce students to high-quality essay parts and steps required to complete the TBGO, and a teacher dashboard for teacher users to make data-driven decisions about their writing instruction (Evmenova et al., 2016).

***Thematic Analysis*** – a qualitative data analysis method that involves reading through a data set (such as transcripts from in depth interviews or focus groups) and identifying patterns in meaning across the data. Such an analysis is a comprehensive process where researchers can identify numerous cross-references between the data and the research’s evolving themes (Braun & Clarke, 2006). It is used to analyze classifications and present themes (patterns) that relate to the data.

***Think Aloud*** – research data used in empirical research processes in which participants are asked to perform a task and to verbalize whatever crosses their mind during the task performance (Jääskeläinen, 2010).

## **Chapter Two**

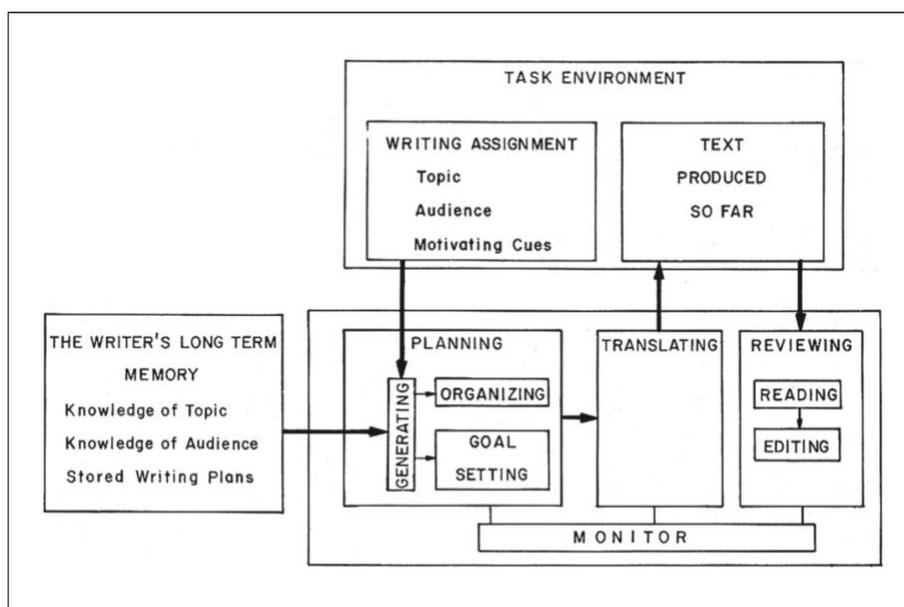
This chapter explores a review of the literature that directly informs the phenomena of idea generation will be explored. This chapter will (a) provide a theoretical framework, which will served as the backdrop to the study, (b) describe writing characteristics of students with high-incidence disabilities and proficient writers, (c) provide an overview of idea generation in writing, (d) describe the use of think aloud procedures for writing, (e) present a comprehensive literature review on persuasive writing interventions for secondary students with and without high-incidence disabilities, and (f) and conclude with a summary of the literature and a call for a more nuanced understanding of the role of idea generation in writing outcomes.

### **Theoretical Framework**

Cognitive models for writing often situate writing in terms of problem-solving (McCutchen et al., 2008) in which problems emerge as a writer attempts to connect language or text to thoughts, feelings, and the expectations of the reader or audience. This undertaking highlights the complexity of writing, noting that problems can range from strategic considerations (e.g., the organization of ideas) to the application of physical or motor demands (e.g., locating the right keys on a keyboard). A proficient writer not only has many low-level skills automated (e.g., transcription, semantic understandings), but can also confront a hierarchy of problems or higher-level skills, including the generation

and organization of genre or task-specific ideas, the production of grammatically correct and cohesive sentences, the demonstration of correct punctuation and spelling, and the production of ideas, voice, and word choice that adhere to the desired audience and task.

The act of writing requires connecting the retrieval of long-term memory to text production (i.e., idea generation; Crossley et al., 2016). Proficient writing largely depends on a writer's ability to effectively access context-relevant information from the long-term memory to produce text, which has demonstrated to be difficult for students with high-incidence disabilities (Graham et al., 2017a). In Hayes and Flowers (1980) original writing model (Figure 1), idea generating (a subcomponent of planning) is responsible for retrieving relevant information from the long-term memory. Information pertaining to the topic or prompt serves as the initial memory probe, which is then audited for relevance. As such, this retrieval must be done strategically (e.g., applying practical strategies for planning, drafting, and revising; Bereiter & Scardamalia, 1987; Graham et al., 2017b) as the writer transforms the knowledge gleaned from the long-term memory and problem solves via an analysis of rhetorical, task, and topic issues, as well as the writer's goals (Alamargot & Chanquoy, 2001).

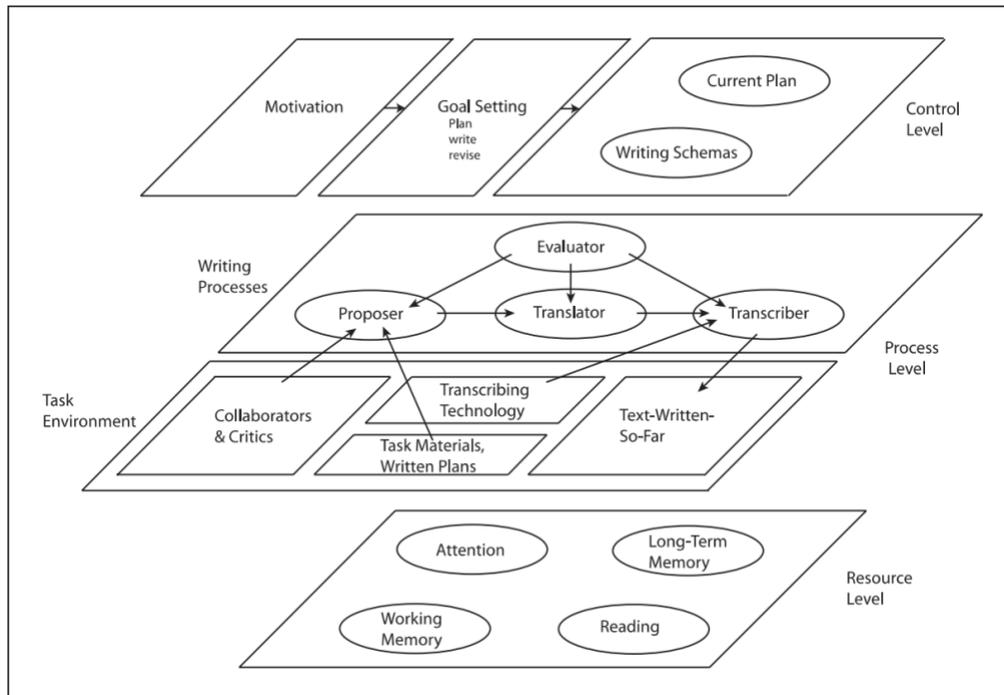


*Note. Reprinted from "Identifying the Organization of Writing Processes", by Hayes, J. R., & Flower, L. S., 1980. In L. W. Gregg & E. R. Steinberg. (Eds.), Cognitive processes in writing (pp. 7) Erlbaum.*

**Figure 1.**

*The Hayes-Flower Model (1980)*

This study was informed by the cognitive model of writing developed by Hayes (2012; Figure 2), which provides a cognitive theoretical framework as a backdrop. This writing model is modified from the earlier, Hayes-Flower model (Hayes & Flower, 1980). This model, updated to 2012, includes the addition of "working memory," which serves as a resource for the generation of ideas; however, the researcher argues that the generation of ideas is embodied throughout all three levels of the current updated writing model.



*Note. Reprinted from “Modeling and Remodeling Writing.” Hayes, J. R. (2012).*

*Modeling and remodeling writing. Written Communication, (29)3, 369-388.*

**Figure 2.**

*Hayes (2012) Writing Model*

**Hayes Writing Model**

The cognitive writing model introduced by Hayes (2012) identifies writing processes of a competent writer and includes three levels (a) control level (i.e., factors that shape and orient the writing activity), (b) process level (i.e., internal writing processes and environmental factors that guide them), and (c) resource level (i.e., necessary factors for writing). While this model includes working memory at the resource level, which offers the necessary cognitive resources for the generation of ideas, it can be

argued that the generation of ideas can occur throughout all three levels of the writing process, including the control level, the process level, and the resource level because of the recursive nature of the writing process (Ferris & Hedgcock, 2013; Ortlieb & Schatz, 2019).

### ***Control Level***

The control level includes motivation, goal setting, the current plan, and writing schema. The nature of opinion-based persuasive writing demands that a writer convince the reader to agree or consider the proposed point of view. This would require that the writer possess a degree of motivation that would stimulate the generation of ideas to adhere to the genre-specific task of convincing the reader to take on a certain affect. The genre of persuasive writing contains specific genre elements, such as identifying an opinion, providing reasons, and offering explanations and a counter argument. To adhere to these genre-specific elements, the writer is required to generate ideas that would accomplish each of the required elements. Because writers will vary in their knowledge of how to create a text and to craft a genre-specific text, the writing schemas of individual writers (i.e., the assortment of knowledge relevant to a concept, including background knowledge; Sun, 2014) will inherently impact the number and the relevance of ideas produced, as well as the organization of such ideas (Hayes & Ollinghouse, 2015). As such, the influence of idea generation is evident throughout the control level.

### ***Process Level***

The process level of Hayes (2012) cognitive model of writing includes the writing processes and the task environment; each allow for the inclusion of idea generation to be

embedded throughout this level. The writing processes are representative of the internal thought processes that result in writing actions, including proposing, translating, transcribing, and evaluating.

- The act of *proposing* includes internally suggesting ideas to be included within the text. These ideas may be stimulated by environments, memory, goals, collaborators, and the text the writer has already produced (Hayes & Ollinghouse, 2015). The ideas that are proposed are typically nonverbal, such as visual images, memories, or abstract concepts (Alves & Limpo, 2015; Chenoweth & Hayes, 2003).
- These ideas are then translated from nonverbal ideas into written text (e.g., *translating*).
- Lastly, the ideas that are transformed from a nonverbal form to a written form are then evaluated for relevance, quality, and appropriateness. The evaluation may be the judgement of the idea or the translation of the idea into the chosen written form.

The task environment, which is the second component of the process level, also embodies the generation of ideas throughout. The task environment includes both social and physical environments that influence the writing process. For example, the social environment of what collaborators and potential critics say, or the perceived acceptance or rejection of the transcribed ideas may impact how ideas are translated into written text or which ideas are translated (Korde & Paulus, 2017). Additionally, social distractions or background conversations might inhibit working memory from producing quality and the

quantity of internal thoughts and ideas. Further, teacher demands to “hurry up” and to finish quickly might hinder the generation of additional ideas or creative ideas and insight (Freedman et al., 2016).

### ***Resource Level***

The components of the resource level include attention, long-term memory, working memory, and reading, which all can subsume aspects of idea generation. Attention is the ability to maintain focus on a task or “executive control.” The ability to focus attention is necessary for writing and for high-quality text production. If attention is not maintained, then it makes sense that the quality and quantity of ideas for adequate text production would also deteriorate.

Hayes and Ollinghouse (2015) determined that long-term memory includes the writer’s knowledge of facts, events, schemas, vocabulary, grammar, and orthographic skills (i.e., conventions for writing a language). Proficient writing requires writers to have adequate topic and genre knowledge, which is related to a writer’s schema and long-term memory. As such, writers with ample topic and genre knowledge are typically able to produce more ideas of higher quality and with less effort than less skilled writers (Hayes & Berninger, 2014). Additionally, writers use working memory as they plan for the writing process, including the generation of ideas, the translating of the ideas, and the evaluation of the ideas (MacArthur & Graham, 2016). Lastly, as writers produce text, they often read their compositions and edit and revise their ideas and the translation of their ideas. The function of the reading process can stimulate more ideas or enhance the creativity of the translation of nonverbal ideas into written text (McCutchen, 2011).

Given the significance of idea generation as an element that is highlighted in both Hayes and Flowers (1980) writing model (e.g., planning) and in the updated Hayes (2012) writing model (e.g., working memory) it is imperative that this portion of the writing process be explored as it not only serves as a catalyst for text production, but is also recursive in nature as the writer rereads the text they produce. Additionally, while the 1980 and 2012 writing models feature idea generation as a critical element, it can be argued that idea generation is engrained throughout the entire writing process, and therefore, serves as a feature worth examining.

### **Writing Characteristics of Students with High-Incidence Disabilities and Proficient Writers**

Proficient writers can employ metacognitive knowledge to organize, plan, revise, and monitor the writing process. They can generate ideas and themes that are categorized into organizational structures to produce logical and coherent compositions (Liu & Wan, 2020). Additionally, proficient writers can adhere to a goal, typically based off a prompt, and make modifications to their written work according to audience, genre-specific tasks, and beliefs (Alamargot et al., 2011). Adept functioning of working memory is often cited as the difference between proficient writers compared to less skilled writers (Bereiter & Scardamalia, 1987; Sinaga & Feranie, 2017). As such, a limited capacity of working memory can constrain the number of processes that can be simultaneously activated, such as orthographic processing, sentence formulation, and text elaboration through the generation of ideas. Idea generation, which requires the strategic and purposeful process of searching long-term memory for ideas, is held within a writer's working memory.

Proficient and skillful writers have typically automated lower-level skills such as transcription and vocabulary retrieval, allowing for higher-order processes, such as the coordination of ideas, planning, and genre-elements to flourish. Therefore, with lower-level processes automated, proficient writers have the capacity to dedicate working memory resources to higher-level processes.

On the contrary, students with learning or behavioral difficulties, particularly those with high-incidence disabilities (e.g., learning disabilities, emotional or behavioral disorders), typically have limited knowledge of the writing process (Graham et al., 2017a). Thus, they generally spend less time planning and often experience difficulties generating relevant ideas and revising and editing their compositions. Furthermore, students who struggle with writing, particularly those with high-incidence disabilities, typically lack a strategic plan for learning (Graham et al., 2013). Therefore, as they begin to write, they often generate repetitive or irrelevant ideas that are disorganized and/or initiate minimal planning even when provided with prompting (Graham et al., 2013; Koutsoftas, 2016). To that end, students with high-incidence disabilities typically produce poorly organized, shorter, or incomplete compositions, as well as weaker overall quality of writing compared to their typically developing peers (Graham et al., 2017a).

Adolescents, particularly those with high-incidence disabilities, are typically characterized as a population that is struggling to showcase achievement gains in writing (Benko, 2012) and have difficulty with all writing genres (Dobbs, 2014). This challenge may be due to the authoritative parameters required for specific genres (e.g., producing a counterargument for persuasive writing), which requires both self-regulation skills (e.g.,

beginning a task, staying on task) and cognitive demands (e.g., planning, organizing; Graham et al., 2017a). Secondary students who experience writing difficulty possess a limited understanding of the critical cognitive strategies needed for effective and proficient writing (Perin, 2013). This shortcoming for not only demonstrating knowledge, but also expressing ideas limits learning opportunities due to the impact writing has on the facilitation of learning and critical thinking (Graham et al., 2015).

### **Idea Generation in Writing**

The seminal work conducted by Bereiter and Scardamalia (1987) demonstrates that students with and without high-incidence disabilities have difficulty generating ideas for written language compared to the generation of ideas for oral language. The production of ideas or information during conversation provides prompts or feedback from the speaker, which can serve as a cue for how the listener can respond. This process of listening, cueing, and responding is repeated with oral language; however, in writing, the support of prompts, feedback, and cues do not occur spontaneously. As such, the writer is independently responsible for ideation by effortfully and purposefully identifying a memory probe and using that probe to explore long-term memory for relevant ideas.

Bereiter and Scardamalia (1987) recognized two distinct configurations of idea generation: knowledge telling and knowledge transforming. Novice writers, and often those with high-incidence disabilities, are knowledge tellers, in which they retrieve all relevant information on the subject matter, prompt, and related schemas from long-term memory and translate these ideas into written text. As a result, these immature writers

retrieve content from whatever cues they can employ, which often results in a “memory dump” of text. Thus, their compositions often result in little coherence and depth.

Relatedly, writers with high-incidence disabilities who are often knowledge tellers, typically have difficulty generating ideas that might be different from their own, which is a critical component to the genre of opinion-based persuasive writing, as the writer must consider counter arguments to their opinion.

Proficient writers are typically described as knowledge transformers, in which they can assert and adhere to a written communication goal with respect to the parameters imposed by the genre (e.g., persuasive writing) while simultaneously generating ideas. As such, knowledge transformers can not only translate nonverbal ideas into written text, but are also able to audit the ideas before, during, and after writing them down. Additionally, they are typically able to navigate and problem-solve potential problems of logic, appropriateness, and alternative perspectives of the ideas they have constructed. As a result, proficient writers or knowledge transformers typically spend more time planning and reflecting than do knowledge tellers or writers with high-incidence disabilities.

### **Idea Generation in Previous Studies**

Generating ideas and then translating those ideas into coherent text can be considered the two most basic processes in writing (Hayes & Ollinghouse, 2015). If one does not have any ideas or does not have access to any ideas, then one has nothing to write about and is left with a blank sheet of paper. If one has ideas but no medium to express them, then no written communication occurs. The phenomenon of idea generation is largely understudied compared to other cognitive processes involved in

writing (e.g., revising). This section will describe the scant literature found that focused on idea generation in writing.

A study conducted by Van den Bergh and Rijlaarsdam (2007) aimed to establish an empirical basis for the distinction between different types of generating. As such, this establishment would enhance the understanding of written text production. This study demonstrated that preceding cognitive activities (e.g., reading, “generating activities,” structuring/organizing) influence the occurrence of idea generation. As such, during certain moments in the writing process, idea generating as the consequence can be predicted if the writer’s current activity is known. For instance, previous cognitive activities (e.g., reading, generating activities, structuring) may decrease or increase the probability of the generating of ideas depending on where in the writing process the writer is. For example, structuring decreases the likelihood of generating in the beginning, however, increases the probability of generating later in the writing process. Alternatively, for translating or writing, the opposite is true; in the beginning of the writing process, the act of writing appears to activate idea generation, yet during the later portion of the writing process idea generation is less likely to occur after writing.

Dunn (2013) examined three students (second and fourth grades) with learning disabilities who were taught the Ask, Reflect, Text (ART) mnemonic strategy to help improve story content and quality. The ART mnemonic consists of a strategy in which the students “Ask” themselves a series of seven questions (i.e., Who is in the story? Where does it take place? When does it take place? What happens? What happens next? How does the story end? How do the characters feel?). Next students “Reflect” on their

answers and illustrate their story using a form of art media (e.g., paints, markers, play dough). Lastly, from the illustration produced as a prewriting strategy, students would then generate their “Text.” The ART mnemonic strategy improved all participants’ story content, however, the overall story quality improved to a lesser extent.

Crossley and colleagues (2016) evaluated idea generation using human ratings of idea generation features, such as idea fluency, idea flexibility, idea originality, and idea elaboration. These evaluations were used to analyze the extent to which idea generation relates to human judgements of essay quality from a collection of college student essays. Additionally, the authors used this analysis to examine linguistic features from the essays used to develop a predictive model of idea generation to understand the relationship more fully between certain language features in an essay and the idea generation scores given to that essay. The results of the study demonstrated that essays that were scored as having a greater number of ideas that were flexible, original, and elaborated were considered to be of higher quality. Two of those features (elaboration and originality) were later analyzed and considered to be significant predictors of essay quality scores in a regression analysis. Additional results demonstrated that idea generation is heavily linked to language features in essays, including the use of unique multiword units, more difficult words, semantic but not lexical similarities between paragraphs, and fewer word repetitions.

Empirical studies exploring or examining idea generation for writing were not found throughout the literature. Much of the focus of idea generation was not related to the act of writing, but instead surrounded student dialogue within groups or pairs (e.g.,

Matić, 2019) or crowdsourcing for design ideas (e.g., Sun et al., 2015). Given the genre-specific demands of persuasive writing, including the ability to identify an opinion and to provide reasons and explanations to support that opinion, alongside the critical component of idea generation for writing, a comprehensive literature review was conducted to explore how idea generation might be accounted for or excluded within persuasive writing interventions for secondary students with and without high-incidence disabilities.

### **Review of Existing Literature on Writing Interventions**

Several reviews regarding writing interventions for students with and without disabilities have been conducted in recent years. Topics discussed within the reviews have included syntheses investigating the impact of technology (e.g., computer-based graphic organizers, Ciullo & Reutebuch, 2013; online writing instruction, Vasquez & Straub, 2016; online interventions, Little et al., 2018), specific strategy instruction (e.g., Self-Regulated Strategy Development, Sreckovic et al., 2014; peer feedback, Hoogeveen & van Gelderen, 2013; grammar and spelling, Williams et al., 2018), genre specific interventions (e.g., argumentative, Drews et al., 2009), a combination of interventions (e.g., integrating reading and writing interventions, Graham et al., 2018; impact of writing instruction on reading, Graham & Herbert, 2011), writing interventions for disability specific populations (e.g., learning disabilities, Gillespie & Graham, 2014; emotional or behavioral disorders, Mastropieri & Scruggs, 2014; and autism spectrum disorder, Finnegan & Accardo, 2018), and writing for secondary students (e.g., Miller et al., 2018).

Gillespie and Graham's (2014) meta-analysis revealed that strategy instruction, dictation, procedural facilitation, prewriting, goal setting, and process writing had a statistically significant positive impact on the writing quality of students with LD, while Kaldenberg and colleagues (2016) noted intervention studies using the self-regulated strategy development (SRSD) or a non-SRSD writing strategy produced high effect sizes for students with LD. In a recent meta-analysis conducted by Graham and colleagues (2018), surveyed preschool through high school students and determined that literacy programs balancing reading and writing instruction can strengthen reading and writing and that the two skills can be learned together advantageously.

Several researchers have conducted comprehensive reviews focusing on the use of technology interventions to improve literacy outcomes, including those for students with high-incidence disabilities. Ciullo and Reutebuch (2013) conducted a comprehensive search of the literature to investigate the effectiveness of computer-based graphic organizers across content areas for students with learning disabilities. They determined that with explicit instruction and guided practice, the use of graphic organizers yielded high effect sizes on social studies measures and written comprehension. Vasquez III and Straub (2016) determined that a corpus of evidence-based practices of online writing instruction has yet to be developed, and that the four studies identified do not provide a basis for the identification of evidence-based practices of online writing instruction for students with disabilities or those struggling with writing. The findings from the review orchestrated by Little and colleagues (2018) suggested a positive impact of technology-based writing instruction on student's writing outcomes, which may be due in part to the

ability of technology to supplement the delivery of instruction, thus allowing students additional opportunities to engage with writing.

Lastly, reviews have focused on specific strategies used to improve writing outcomes of students. Hoogeveen and van Gelderen (2013) analyzed the effects of instructional factors accompanying peer response on writing proficiency and determined that peer response with additional strategy instruction in rules for interaction, genre knowledge, or a combination of the aforementioned instructional aspects is effective compared to individual writing. Sreckovic and colleagues (2014) evaluated the evidence base of self-regulated strategy development (SRSD) for writing with students with and at risk for emotional and behavioral disorders and determined that SRSD for writing met standards as a writing evidence-based practice for this population.

### **Systematic Review of Idea Generation in Persuasive Writing**

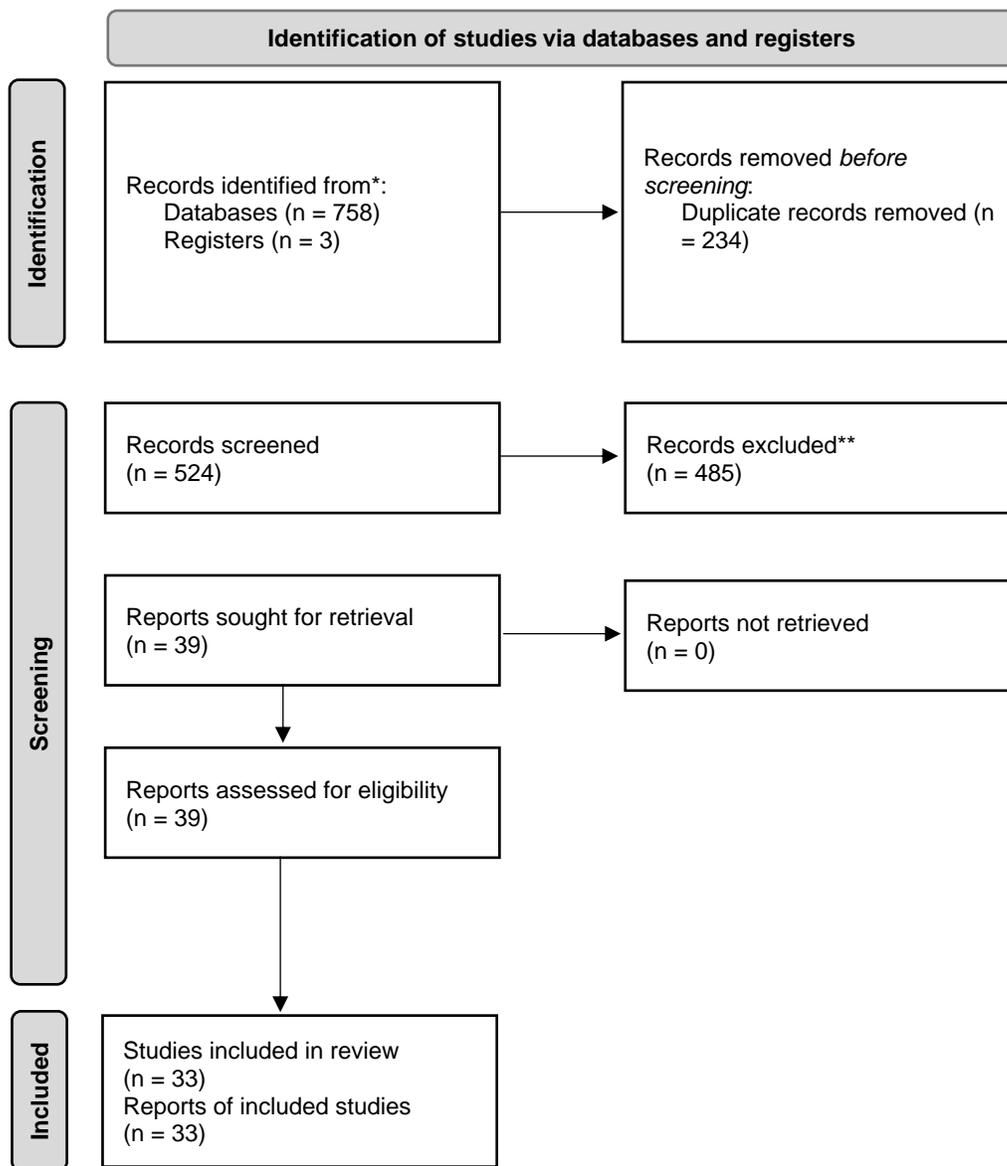
A systematic review of idea generation in persuasive writing was conducted to investigate and compare the scope of persuasive writing interventions for secondary students with and without high-incidence disabilities (e.g., learning disabilities, emotional and behavioral disorders, autism spectrum disorder, ADHD, speech and language impairment) from 1990 to 2023. Additionally, this analysis examined how students are supported in the brainstorming or planning phase of the writing process to generate ideas when given an opinion-based persuasive writing prompt.

### ***Literature Search Procedures***

Three electronic databases were searched for relevant work, which included: (a) Education Research Complete via EBSCO, (b) APA PsychInfo, and (c) ERIC. Key terms

included, “*persuasive writ\**.” The purpose of using an asterisk as a search practice was to truncate the term to include other encompassing words, such as “writing” and/or “written.” This list of acceptable publications was limited to peer-reviewed sources, empirical studies, and one of the conventionally defined secondary grades. Due to the comprehensive intent of this review, publication years spanned the years of 1990 through 2023. Titles and abstracts were scrutinized to determine initial eligibility. Once a body of studies was identified, each study was further examined to determine if it met the inclusion criteria.

This systematic review adopted the PRISMA statement (Preferred Reporting Items for Systematic Reviews and Meta-analyses; Moher et al., 2010), which is illustrated in Figure 3, to aid in the critical appraisal of publications and the reporting of the studies extracted and examined. An initial database search yielded 606 results, which resulted in 464 results after the duplicates were removed. All 464 articles were screened based on the inclusion and exclusion criteria, which eliminated 425 articles. The remaining 39 articles were further evaluated, which resulted in the elimination of an additional five articles, resulting in a total of 33 studies to be included in this synthesis.



*Note. Adapted from Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2010).*

*Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. International Journal Surgery, 8(5), 336-341.*

**Figure 3.**

*The PRISMA Statement for Reporting of Systematic Reviews and Meta-analyses*

In addition to the computer database search, the researcher conducted ancestral searches of syntheses by Roitsch and colleagues (2021), Little and colleagues (2018), and Graham and Perin (2007) were conducted. This search procedure did not yield any additional articles from the initial database search. However, ancestral searches of Ennis and colleagues (2015) provided one additional article not previously captured in the initial search.

**Data Extractions and Critical Appraisal.** The researcher created an Excel spreadsheet was created to capture and organize the following identifying information for the 33 approved studies: (a) research design, (b) intervention employed, (c) intervention duration, (d) maintenance, (e) grade level(s), (f) setting, (g) disability/ability category, (h) measures, and (i) findings. A critical appraisal of the 33 studies that were determined to meet all the inclusion/exclusion criteria illustrated below was then conducted to interpret the data, results, findings, and to identify biases. The organization and the decision for categories and themes that are displayed in the literature review were determined based on the research questions.

**Inclusion Criteria.** To be included, articles must have been peer-reviewed pieces of empirical research and focused upon one of the conventional secondary grades and/or ages. Included studies also had to specifically focus on the genre of persuasive writing, and more precisely, opinion-based persuasive writing. In other words, studies were not included if students were required to extract evidence from readings, course content, or content-specific materials/resources to support claims. Studies that examined writing outcomes in general and the generalization of writing to the genre of persuasive writing

were not included. Studies were determined to be coded as secondary if they were inclusive of grades 6-12. Because some studies did not list grades, but rather ages, student ages 11-18 were coded as secondary. Further, because some studies included a range of ages, participants as young as nine years old were also coded as secondary if the study included an age span of nine years old to at least 11 years old with data disaggregated. In addition, some studies included a range of grades, so studies including grades as early as 4th grade were included if the study spanned grades 4th through at least 6th grade with disaggregated data.

Although this review was not exclusive to typically developing peers, students with a qualifying disability (e.g., learning disability, emotional and behavioral disorder, other health impairment) were included if they accessed the general curriculum. This included populations of students categorized as having a “high-incidence disability” (HID), students with ASD, and students identified as “struggling” or “at-risk.” Studies that focused on professional development or coaching were included if student outcomes were provided. Due to the unique orthography of the English language, only studies involving English-speaking students in the United States were included.

**Exclusion Criteria.** Those investigations that focused on writing achievement, specifically dysgraphia (the physical or occupational nature of writing, such as spacing) and those inquiries dedicated to the critique and/or development of writing assessments, were not included in this review. Students identified as having complex communication needs, students with speech/language impairments, severe disabilities, such as an Intellectual Disability or Multiple Disabilities were also not included as part of this

review. Additionally, although students with ASD were included in the review, those students with ASD who accessed an adapted curriculum were not included in this review. However, studies examining students who were deaf/hard of hearing or had comorbid conditions in conjunction with being deaf/hard of hearing were not included. Also, students identified as ELL, English Learners, “linguistically diverse,” or minority etc. were excluded. Further, studies examining the effect of teacher professional development and coaching on the occupational nature of student writing and spelling performance were omitted. Because studies were limited to secondary students, this review excluded adults or post-secondary students. Descriptive studies investigating the characteristics of writing, writing skills, or “language features/discourse” were not included. Moreover, studies comparing cognitive abilities, including writing profiles and writing processes were not included. Lastly, studies that focused on argumentative persuasive writing, including the use of informational texts to support student opinions with evidence, were not included to maintain the integrity of the opinion-based specific genre being studied.

### ***Coding Procedures***

Comprehensive coding procedures were employed to organize significant information extracted from each study. The code sheet was used to record information on variables including design information (i.e., group design, single-subject/case design), intervention information (i.e., type described in text), duration of intervention (e.g., number of weeks, number of session), if maintenance was assessed, participant information (i.e., grade, age), setting (i.e., resource room), disability/ability information (i.e., LD, ASD, “struggling”), and findings according to idea generation. Initially,

information extracted for each of the categories was coded using open codes. After initial codes were inputted, the author scrutinized codes for uniformity of descriptions and findings (see Table 1).

**Table 1***Persuasive Writing for Secondary Students with and without Disabilities*

Citation	Participants	Design	Intervention	Duration	Maintenance	Results
Ferretti & Lewis, 2019	N = 96 n = 48 LD Grade 4 & 6	Experimental	Condition 1: general goal to persuade. Condition 2: elaborated goal that focuses on elements of persuasive discourse	Post-test only Allotted time of 45 minutes to complete persuasive writing task	None	Writing more persuasive in elaborated goal condition
Ozdowska et al., 2021	N = 8 n = 8 ASD Age 9 - 11	Single-subject/case	Condition B: iPad-based writing software Read&Write; Condition C: app + POW + TREE (SRSD)	6 weeks	None	Improvement of writing for most students
Boyle & Hindman, 2015	N= 52 n = 15 proficient writers n = 11 struggling writers Grade 8	Experimental	DECIDE graphic organizer	3, 45-minute sessions	None	Better essay writing and organization

Citation	Participants	Design	Intervention	Duration	Maintenance	Results
Regan et al., 2018	N = 94 <i>n</i> = 46 EL, SWD, & struggling writers Grade 7	Quasi experimental	A mobile-based graphic organizer (MBGO) with embedded self-regulated learning strategies	4 lessons over 8 sessions totaling 30- to 40-min	None	Significantly outperformed for number of transition words and writing quality
Nordness et al., 2019	N = 3 <i>n</i> = 3 EBD Ages 18 & 19	Single-subject/case	(SRSD) POWER UP	4, 30-minute lessons individually until mastery	None	Essay quality improved immediately following strategy instruction
Garwood et al., 2019	N = 11 <i>n</i> = 7 EBD <i>n</i> = 2 OHI (ADHD) <i>n</i> = 1 MID, EBD Age 13-17	Single-subject/case	(SRSD) POW + TREE	30-35 min for 6 consecutive days	2 days post-intervention	Large effects for persuasive parts, word count, holistic quality, and social validity
Geres-Smith et al., 2019	N = 12 Grade 5-7	Experimental	SRSD (POW + TREE) & instruction on the use of self-statements	30 min, 2 times a week for 5 weeks.	None	Large gains in writing quality, composition duration, and writing self-efficacy were found in both conditions
Midgett et al., 2008	N = 181	Experimental	A general goal; A goal to	2 sessions	None	The content and audience goal

Citation	Participants	Design	Intervention	Duration	Maintenance	Results
	Grade 5 & 8		improve content; A goal to improve content and communication with an audience			groups wrote essays that were more persuasive than essays by students in the general goal group
Cramer & Mason, 2014	N = 8 <i>n</i> = 2 ODD <i>n</i> = 1 disruptive disorder <i>n</i> = 1 ASD <i>n</i> = 1 borderline personality <i>n</i> = 1 ADHD, ODD, bipolar <i>n</i> = 1 ADHD, ODD, OCD <i>n</i> = 1 ADHD Grade 7 & 8	Single- subject/case	(SRSD) POW+TREE quick writes paired with a new a peer revision	45-minute sessions, five days a week	None	Increased quality and primary traits
Bishop et al., 2015	N = 3 <i>n</i> = 3 ASD Grade 7 & 8	Single- subject/case	A graphic organizer intervention package	3, 40-min sessions.	None	Improved persuasive writing
Mastropieri et al., 2015	N = 32 <i>n</i> = 32 EBD <i>n</i> = 12 EBD, LD Grade 8	Experimental	SRSD (POW + TREE strategy) & multiple self- regulation procedures	5, 30- minute sessions over a two-week period	2 months post- intervention	Statistically significant higher quality essays that contained more essay elements, words, sentences,

Citation	Participants	Design	Intervention	Duration	Maintenance	Results
Mastropieri et al., 2014	N = 12 n = 4 EBD n = 3 EBD, OHI n = 2 EBD, LD n = 2 EBD, ASD n = 1 EBD, ASD, OHI Grade 7 & 8	Single-subject/case	Modified SRSD for POW + TREE & quickwrites	Fewer than 50 instructional sessions; 5 days a week for 45-min	2 weeks post-intervention	and transition words. All students mastered components of effective persuasive essay writing, and improved length and quality from baseline to post instruction
Cuenca-Carlino & Mustian, 2013	N = 9 n = 6 EBD n = 3 OHI Grade 6-8	Single-subject/case	(SRSD) POW + TREE & self-determination instruction	40 min sessions, 4 days per week, for 14 to 23 days	None	Students significantly improved in persuasive essay components, quality, number of words written, transition words, sentences written, and paragraphs.
Cuenca-Sanchez & Mastropieri, 2012	N = 21 n = 6 EBD, LD, OHI n = 4 EBD n = 4 EBD, LD n = 4 EBD, OHI n = 2 OHI n = 1 EBD, ASD Age averaged 13.1	Experimental	(SRSD) POW + TREE & self-determination training	33 days, four days a week during 30-minute sessions; 16.5 total hours	2 weeks post-intervention	Experimental students significantly outperformed comparison in all the persuasive essay-writing components assessed, in their ability to recall the

Citation	Participants	Design	Intervention	Duration	Maintenance	Results
Jacobson & Reid, 2010	N = 3 n = 3 ADHD (OHI) Grade 11 & 12	Single-subject/case	(SRSD) STOP + DARE	3, 40-min sessions per week until they were able to write an essay with all six parts	3 weeks post-intervention	parts of a persuasive essay, in the self-efficacy measure, and on self-determination knowledge.  In all phases of the study, PND for essay parts and number of words was 100%. Large increases in holistic quality after instruction by 165% to 300% over baseline performance.
Knudson, 1991	N = 159 Grade 4, 6, & 8	Experimental	Treatment 1; instruction with model pieces of writing  Treatment 2: scales and questions to guide students' writing and revision.  Treatment 3: both model pieces of writing and scales and	14 days, 20 minutes per day	2 weeks post-intervention	Students in grade 8 wrote significantly better than students in grades 4 and 6.

Citation	Participants	Design	Intervention	Duration	Maintenance	Results
Ferretti et al., 2000	N = 124 n = 62 LD Grade 4 & 6	Experimental	<p>questions to guide writing, with opportunities for students to write</p> <p>General goal condition to take a position &amp; the Elaborated Goal condition were given the same general goal plus explicit subgoals</p>	45 min posttest	None.	Sixth-grade students in the elaborated goal condition produced more persuasive essays and included a greater number of argumentative elements than did either sixth graders in the general goal condition or fourth graders in both goal conditions.
Crowhurst, 1991	N = 100 Grade 6	Experimental	<p>1: instruction in a model for persuasion &amp; writing practice;</p> <p>2. instruction in a model for persuasion &amp; reading practice;</p> <p>3. reading novels and writing book reports &amp; a single lesson in</p>	10, 45- minute lessons over, two per week for five weeks	None.	Groups 1 and 2 scored significantly higher than the control group on writing quality, on the organization of compositions, on the number of conclusions and text markers used, and on the degree of elaboration of

Citation	Participants	Design	Intervention	Duration	Maintenance	Results
			the persuasion model; 4. reading novels and writing book reports (control group)			reasons.
Hacker et al., 2015	N = 628 n = 92 IEP Grade 7	Quasi-experimental	(SRSD) DARE	6 weeks	2 months post intervention	No differences between the 2 groups from pretest to posttest; however, scores between posttest and maintenance showed that the self-regulated strategy development students scored significantly higher than students in the control school.
Evmenova et al., 2020	N = 43 n = 43 LD Grade 6-8	One group pre/post	A technology-based graphic organizer (TBGO) with embedded self-regulated strategies and technology supports	8 weeks	One-week post-intervention	Significant differences in the number of words, transition words, essay parts and maintenance.
Mason et al.,	N = 592	Experimental	(SRSD) POW +	4 learning	Midfall to	Students receiving

Citation	Participants	Design	Intervention	Duration	Maintenance	Results
2017	<i>n</i> = 95 struggling <i>n</i> = 497 not struggling Grade 5 & 6		TREE professional development workshop with virtual consultation	phases ranging from 60-90 minutes & 2 mandatory 90-minute video conferencing sessions	late spring	instruction improved in the number of writing quality and words written.
Jacobson & Reid, 2012	N = 4 <i>n</i> = 4 ADHD Grade 10 & 11	Single-subject/case	(SRSD) STOP + DARE	6 lessons divided as necessary until mastery (about 3 sessions weekly for 40 minutes)	2- and 4-weeks post intervention	Essays were longer, more complete, of higher holistic quality, with more transition words, and with additional time spent planning. No student included all elements in post instruction.
Straub & Vasquez, 2015	N = 4 <i>n</i> = 4 LD Grade 6, 8, 9, & 10	Single-subject/case	SRSD (POW + TREE) using a synchronous online collaborative writing software	5 to 8 consecutive sessions until performance criterion was met	Once mastery was met	All participants increased essay elements, word sequences, and TOWL-3 standard score changes.
Regan et al., 2017	N = 17 <i>n</i> = 2 LD <i>n</i> = EBD <i>n</i> = 1 MD Grade 6 & 7	Single-subject/case	A computer-based graphic organizer (CBGO) with embedded self-regulated	4, 50-min lessons for tool orientation & 5-7 independent writing sessions with CBGO	1 week after last writing session with CBGO	All three groups of students wrote more sentences of higher quality and used transition words.

Citation	Participants	Design	Intervention	Duration	Maintenance	Results
Mastropieri et al., 2009	N = 12 n = 3 ED, LD n = 3 ED, LD, EL n = 2 ED, LD, OHI n = 1 ED, OHI n = 1 ED n = 1 ED, OHI n = 1 ED, LD, SLI, EL Grade 8	Single-subject/case	learning strategies (SRSD) POW + TREE	4, 30-minute sessions per week for a total of 55 sessions	11.5 weeks post-intervention	All students had mastered the components of effective persuasive essay writing and increased length, quality of essays, and on-task behavior.
Evmenova et al., 2016	N = 10 n = 4 EBD n = 3 ASD n = 2 LD n = 1 ADHD Grade 7 & 8	Single-subject/case	A computer-based graphic organizer (CBGO) with embedded self-regulated learning strategies	4, 50-min sessions	After an additional lesson on writing without the CBGO.	All participants improved the quality of their writing, transition words, and the majority of students also increased the quantity of their writing.
Ennis et al., 2015	N = 44 n = 28 EBD Grade 7-12	Pre/Post	SRSD (STOP & DARE)	50-min sessions, 2 days per week	None.	Significant gains were made in writing and academic engagement.
Hauth et al.,	N = 8	Single-	SRSD (POW-	6 lessons (30-40	4 weeks post-	Students improved

Citation	Participants	Design	Intervention	Duration	Maintenance	Results
2013	<i>n</i> = 2 EBD <i>n</i> = 2 EBD, OHI <i>n</i> = 1 EBD, SLD <i>n</i> = 1 OHI, HI <i>n</i> = 1 EBD, ASD <i>n</i> = 1 ASD Grade 8 Average age 13.4	subject/case	TREE)	min), with an additional session for mastery for 2 of the 3 groups.	intervention	substantially on all essay measures, including essay length, essay quality, and number of essay parts, sentences, paragraphs, and planning time. Students generalized to the content area of civics
Mason et al., 2011	N = 16 <i>n</i> = 14 SLD <i>n</i> = 2 OHI/ADHD <i>n</i> = 1 SLD/ADHD Grade 7	Single-subject/case	(SRSD) POW-TREE & quickwrites	5 to 6, 45-minute lessons	Immediately following post-intervention	All study participants improved in the number of persuasive parts, number of written words, and quality.
Mason et al., 2013	N = 279 <i>n</i> = 55 IEP Age averaged 13	Quasi-experimental	SRSD (POW + TREE) & quickwrites	4, 30-min sessions	2- weeks and 4- weeks post-intervention	Large effects were obtained for the number of elements written, organizational quality, and persuasive quality with a small effect for the number of words written

Citation	Participants	Design	Intervention	Duration	Maintenance	Results
Mason et al., 2010	N = 5 n = 3 EBD n = 1 EBD, ASD n = 1 EBD, SLI, ADHD Age 12- 14	Single-subject/case	(SRSD) POW-TREE & quickwrites	5, 30- minute sessions over the course of 2 to 3 weeks	Immediately following post-intervention	Improved quality of a persuasive quick write response and maintained, however the higher quality responses yielded a lower mean number of words written
Lin et al., 2004	N = 226 Grade 8	Experimental	Inspiration software (concept maps)	1.5 months	None	More ideas generated and higher quality than those in the paper-and-pencil concept mapping condition.
Kiuhara et al., 2012	N = 6 n = 2 ADHD n = 2 SLD n = 1 SLI n = 1 ED Grade 10	Single-subject/case	(SRSD) STOP, AIMS, & DARE	Not specified	Yes	All students spent a greater amount of time planning and writing their papers, with improvements in quantity, quality, essay elements, and completion.

*Note.* EBD = emotional behavioral disorder, ADHD = attention deficit hyperactive disorder, SLI = speech language impairment, SLD = specific learning disability, LD = learning disability, IEP = individualized education program, OHI = other health impairment, ASD = autism spectrum disorder, HI = hearing impairment, EL = English learner, MD = multiple

*disabilities, ODD = oppositional defiance disorder, OCD = obsessive compulsive disorder, MID = mild intellectual disability,  
SWD = students with high-incidence disabilities*

### *Overall Characteristics of the Included Studies*

This section the results based on a comprehensive search of the professional literature between 1990 and 2023. The search yielded a total of 33 secondary intervention studies that delivered persuasive writing interventions for secondary students with and without disabilities and measured writing outcomes. A total of 2,822 participants with and without disabilities were included in these studies with a mean grade of 6th (range 4th grade to 12th grade). The total number of students with emotional and behavioral disorders (EBD) was 150. This includes students who also had secondary or related disabilities, such as oppositional defiance disorder (ODD). The total number of students with unspecified disabilities or who had an individualized education program (IEP) was 147. One hundred and seventy-eight students had either a learning disability (LD) or specific learning disability (SLD). Most studies included in this review employed a single-subject/case design ( $n = 17$ ; 52%) with 14 experimental, and two pre/posttests. Table 1 provides a synthesis of the studies that includes participant demographics, research design, intervention, duration, maintenance, and results. The researcher examined descriptions of persuasive writing interventions employed, as well as idea generation within the brainstorming phase of the writing process.

**Self-Regulated Strategy Development.** The use of the Self-Regulated Strategy Development (SRSD) framework dominated the type of persuasive writing intervention used for secondary students. Of the 33 studies extracted, 21 of the studies used the SRSD framework directly or used it in combination with other interventions (see Table 1).

Studies that used the SRSD framework directly ( $n = 8$ ) either employed the mnemonic POW + TREE (Pick my ideas, Organize my notes, Write and say more + Topic sentence, Reasons, Ending, Examine;  $n = 4$ ) or the mnemonic STOP + DARE (Suspend judgment, Take a side, Organize ideas, Plan more as you write + Develop your topic sentence, Add supporting ideas, Reject at least one argument for the other side, End with a conclusion;  $n = 3$ ). One study used the SRSD framework directly, however, focused only on the mnemonic DARE and eliminated the STOP piece of the mnemonic. Four studies explored SRSD using the STOP + DARE mnemonic for persuasive quickwrites. One of the SRSD studies focusing on quickwrites included an additional treatment group that included a peer revision strategy intervention in combination with the SRSD (POW + TREE) intervention.

Several studies ( $n = 8$ ; see Table 1) employed the SRSD intervention bundle in conjunction with another intervention. Most of the studies that used SRSD in combination with other interventions focused on self-efficacy ( $n = 4$ ) including, self-statements ( $n = 1$ ), self-regulation ( $n = 1$ ), and self-determination ( $n = 2$ ). One study used the SRSD framework with the POW + TREE mnemonic embedded into an App with assistive technology (e.g., text-to-speech, homophone detection, word prediction) while another combined SRSD with POW + TREE for quickwrites with a peer revision mnemonic strategy, LEAF (Listen as the author reads, Explain what you like best, Ask evaluation questions, Finalize your comments). Lastly, the SRSD framework using the POW + TREE mnemonic was combined with a synchronous online collaborative writing

software with additional structured reinforcement activities for one study and combined with a professional development workshop with virtual consultation in another study.

**Mnemonics.** Twenty-eight of the 33 studies (83%) using the SRSD intervention bundle ( $n = 21$ ; see Table 1) adopted a mnemonic as part of the intervention strategy. The most common mnemonic used was the POW + TREE mnemonic ( $n = 15$ ), followed by STOP + DARE (or just DARE;  $n = 5$ ), the IDEAS mnemonic (Identify your Opinion, Determine reasons, Explain why or say more, Add transition words as you go, and Summarize;  $n = 4$ ). The remaining mnemonics only appeared once in the literature: (a) a combination of STOP; Suspend judgement, Take a position, Organize ideas, and Plan and write more, AIMS; Attract the reader's attention, Identify the problem, and Map the context of the problem, and DARE, (b) DECIDE; Draw, Explain, Choose, Ink, Draft, and Edit, (c) POWER UP; Plan, Organize, Write, End, Update and Publish, and (d) LEAF. The purpose of the mnemonics was primarily to ensure that students remembered to include identified persuasive essay parts within their compositions. One mnemonic, LEAF, was used as a peer revision strategy that helped students identify areas of clarification needing to be addressed by their partners.

**Technology Support.** Eight persuasive writing intervention studies for secondary students (24%; see Table 1) included the use of technology. Four of the eight studies involved iterations of a web-based organizer including the MBGO, CBGO, and TBGO, which combines a technology-based graphic organizer with self-regulated learning strategies, and assistive technology functions. The Inspiration software ( $n = 1$ ) was used to help students plan, brainstorm, and organize ideas for persuasive essays. Technology

also served as a medium for professional development as educators participated in a workshop with virtual consultation for SRSD writing instruction. Additionally, an iPad accessible App, which embodied the SRSD framework, including the POW + TREE mnemonic, provided instructional videos that mirrored the six steps of SRSD, while using digital technology to create a persuasive essay. Lastly, technology was used as an instructional delivery method using Adobe Connect video-conferencing platform in combination with Google Docs as a collaborative writing software as a means for expanding the research on SRSD.

### ***Idea Generation Within the Systematic Literature Review***

The researcher sought to explore how students were supported in idea generation during an opinion-based persuasive writing task. This review characterizes idea generation as an explicit and purposeful mechanism for strategically and purposefully searching and probing ideas for writing output (Bereiter & Scardamalia, 1987; Crossley et al., 2016). Interventions, such as POW + TREE, POWER UP, and AIMS offered particular elements that focused on brainstorming and potentially the generation of ideas. For example, the P in POW prompts students to “pick my idea,” while the P in POWER UP prompts students to “plan.” Similarly, the M in AIMS is to “map the context of the problem or provide background information needed to understand the problem. While it is evident that interventions specific to the genre of opinion-based persuasive writing include instructional elements aimed at prompting students to generate ideas, interventions focused on the ability of a writer to probe their memory for ideas were sparse.

Ferretti and Lewis (2019) employed the only intervention found that involved idea generation. The researchers provided students with an elaborated goal condition during the planning phase of the writing process, which focused on elements of persuasive discourse. Students were prompted to generate ideas that would assist a hypothetical student who was struggling to write a persuasive essay, and ultimately were able to produce alternative reasons and rebuttals better than the general goal condition. However, the provision of an elaborated goal did not impact the number or type of ideas generated by the students. Said differently, the quantity of ideas produced by students did not uniquely contribute to the prediction of essay quality after adjusting for the influence of persuasive knowledge, goal condition, and the students' grade and disability status.

These findings suggest that the sole implementation of writing goals is inadequate for secondary students to probe their own long-term memory for implicit knowledge to generate ideas, as well as possessing the knowledge and intentions of others to produce additional arguments or counterarguments. However, there is considerable evidence that explicit instruction situated in genre expectations can support the necessary self-regulation of the writing process (e.g., Graham et al., 2015; Song & Ferretti, 2013). While the use of explicit strategy instruction for genre expectations suggests positive writing outcomes, it appears to be incomplete, as the ability and awareness of the processes for generating reasons, elaborations, and counterarguments is absent.

### **Moving Towards a Deeper Understanding of Supports for Persuasive Writing**

A systematic review was conducted to produce a comprehensive examination of the empirical studies that demonstrate the relationship between persuasive writing

interventions and student outcomes of secondary students with and without high-incidence disabilities. Interventions were examined and categorized in the areas of SRSD, mnemonics, graphic organizers, and technology supported as well as how the included studies promoted idea generation within the writing process.

The overwhelming majority of studies included in this review used the SRSD framework ( $n = 21$ ; see Table 1) as an intervention for persuasive writing. The SRSD comprehensive intervention contains six stages, with the first stage focusing solely on activating background knowledge of genre-specific elements. While it is imperative that students possess the knowledge of the genre of persuasive writing, this component of the SRSD framework does not directly instigate the generation of ideas when students are given an opinion-based persuasive prompt to respond to. The graphic organizers provided throughout most of the persuasive writing interventions (e.g., SRSD and other graphic organizers;  $n = 28$ ) offered students opportunities to plan their essays in accordance with persuasive essay elements. While time spent planning was an outcome measure for several studies (e.g., Geres-Smith et al., 2019; Jacobson & Reid, 2010, 2012; Kiuahara et al., 2012), interventions did not focus on strategies to generate ideas during the planning part of the writing process. Rather, the planning portion of the outcome measure was dedicated to the understanding or mastery of persuasive essay elements (e.g., Hauth et al., 2013) rather than the provision of strategy instruction that initiates the generation of ideas. The conglomeration of interventions dedicated to improving persuasive writing outcomes for secondary students provides direct strategy instruction, however, none of

the studies appeared to focus on how students can generate ideas, going from a blank page to one filled with persuasive discourse.

These findings assert additional empirical support for the relationship between persuasive discourse knowledge and writing quality for persuasive writing (Olinghouse et al., 2015), however, what is less evident is the extent in which strategy use specific to idea generation affects writing outcomes for secondary students. To date, only one study (Crossley et al., 2016) was found that demonstrated a strong link between essay quality and features related to idea generation. Further, while writing models recognize the importance of the number of ideas, they lack specificity on how the generation of ideas can be supported. As such, the exploration of the idea generation processes of both students with high-incidence disabilities and proficient writers has the potential to unveil prominent and effective idea generation strategies that can increase the idea generation acumen of students.

### ***Idea Generation***

Writing research has indicated the importance of planning in the writing process (Graham et al., 2007; Hayes & Flower, 1980), and more specifically the effect of the number and originality of ideas generated on writing success (Crossley et al., 2016). What seems to be missing, however, is the idea generation portion of the planning phase appeared. Future research should consider strategy instruction in the area of idea generation within the planning phase, in particular because an increase in planning time generally suggests an increase in writing quality (Jacobson & Reid, 2012). It is plausible that such instructional practices would stimulate persuasive discourse between the writer

and oneself to prompt the dialogue needed to appropriately address opinion-based persuasive writing prompts.

Additionally, it makes sense that quality and quantity of writing outcomes would increase along with idea generation (Crossley et al., 2016). Such an increase in output would feasibly increase students' self-efficacy in writing. Given the scant literature found surrounding the influence of strategy use to evoke the generation of ideas for persuasive essay writing for secondary students, there is currently not enough information to draw conclusions concerning the effectiveness of interventions focusing specifically on stimulating idea generation. Because this construct has been identified but not deeply explored, future research should aspire to unearth the extent to which strategy use specific to idea generation affects writing outcomes for secondary students.

### **Idea Generation in the Literature**

Limited and dated studies examined idea generation in writing. Van den Bergh and Rijlaarsdam, (2007) examined the conditional relevance of generating activities at different points of the writing process. These activities include (a) if ideas are generated directly after reading the assignment or documentation activity; translation-driven-generation, (b) if ideas are generated directly after producing text; generation-driven-generation, (c) if a generating activity follows a generating activity, and (d) structuring-driven-generating, by which an act of generation is preceded by the structuring of previously generated information. Additionally, Van den Bergh and Rijlaarsdam examined the relationship between these activities and text quality. The results demonstrated that (a) different kinds of idea generation do occur with different overall

frequencies and are more or less rampant during different stages of the writing process, (b) the different kinds of idea generating are related to individual differences between writers, and (c) the relationship between the types of generating and the overall quality of the final written composition is largely dependent on the point in which the writer activates idea generating activities.

Breuer (2012) examined idea generation in first language (L1) and foreign language (FL) writing using a thinking-through-writing strategy. German students of English wrote four academic essays – two in their L1 and two in their FL. One essay in both L1 and F1 were written after planning by notetaking, while the other essays in L1 and F1 were written after planning by freewriting. The planning conditions (notetaking, freewriting) were purposefully chosen to examine if the activation of the linguistic structures in freewriting had an improving effect on idea generation. The results demonstrated that both language and planning influenced the quantitative aspects of the text production. In both essays, the writers produced more characters in their L1 and in both languages character quantity was higher under the freewriting condition. As such, the method of freewriting had an enhancing effect on productivity and on fluency in both languages – a result that might have influenced idea generation. Lastly, participants produced more ideas during the freewriting for planning, but only in their L1.

Most recently, Crossley and colleagues (2016) examined human ratings of idea generation, including *idea fluency*, *idea flexibility*, *idea originality*, and *idea elaboration* to analyze the degree to which idea generation relates to human judgements of essay quality for college student essays. The results of the study indicated that essays that were

judged to be of higher quality included a greater number of ideas that were flexible, original, and elaborated. Further, elaboration and originality were two significant predictors of essay quality scores in a regression analysis. Additionally, results of the study revealed that idea generation is strongly linked to language features in essays, including the use of unique words, more difficult words, semantic similarities between paragraphs, and fewer repeated words.

### **Think Alouds for Writing**

The term “think aloud protocol” is defined as a type of research data used in empirical research processes in which participants are asked to perform a task and to verbalize whatever crosses their mind during the task performance (Jääskeläinen, 2010). A think aloud allows researchers and educators to gain insight into cognitive processes. A think aloud is commonly used to provide empirical support for the reading processes of expert readers (e.g., Shanahan & Shanahan, 2012) and self-regulation processes (e.g., Greene et al., 2011). Think alouds are less commonly used to investigate writing processes and relevant literature appears to primarily focus on gaining insight into the writing process (e.g., planning, drafting, editing) for English language learning students (Alhaisoni, 2012) or the development of writing assessments (Beck, 2018), which does not provide much insight for the context under investigation.

Most notably, Beck and colleagues (2015) went “beyond the rubric” and used a think aloud as a diagnostic assessment for understand the writing strengths and weaknesses of five high school students. In particular, they noted that the use of a think aloud protocol as an assessment tool generated novel information related to audience

awareness, interpretation of the task, and self-evaluation within writing performances. Additionally, Bai (2018) explored the relationship between writing competence, grade level and use of self-regulated writing strategies for Singapore primary students and highlighted young learners' use of self-regulated writing strategies through think aloud protocols. The use of a think aloud has been documented as the most effective way to elicit a learner's use of self-regulated writing strategies (Mackey & Gass, 2015). Similarly, Fernandez and Jamet (2017) documented benefits of think aloud protocols, such as, identifying cognitive and metacognitive processes which are regarded as effective self-regulated learning strategies. The current study did not seek to understand the self-regulated approaches to writing, however, due to the association of writing as a largely self-regulated task (Santangelo et al., 2016), the use of a think aloud as an appropriate vehicle for understanding idea generation processes appeared sensible.

### **Summary of Literature Review**

While idea generation is recognized in most writing models (e.g., Hayes, 2012; Hayes & Flower 1980) it is noticeably absent in the writing literature. More noteworthy is its absence in the persuasive writing literature, which is a genre that requires independent idea generation without the use of an anchor text, instructional video, etc. Before an effective intervention can be employed, researchers must obtain a clear idea of the idea generation processes of students with and without high-incidence disabilities. Generally, procedures that have been effective for struggling writers have merit and purpose for proficient writers. However, research has not yet explored what idea generation processes look like for either population of students. Idea generation,

especially in its non-verbal state, is not visible and takes place inside the head. The use of a think aloud to make such processes visible has the potential to increase the idea generation acumen for both students with high-incidence disabilities and proficient to enhance their knowledge transforming ability and to ultimately increase the writing outcomes for these students.

## Chapter Three

Six components will be described in this chapter. First, this chapter will begin with a description of the participants, sampling techniques, and the setting in which the study took place. Second, the instructional context and writing environment will be described. Third, a description of and a rationale for the concurrent mixed methods research design will be provided, as well as information pertaining to the author's positionality and epistemological underpinnings that inherently guided the study's methodology. Fourth, the qualitative strand will be described, including the data source, data collection procedures, and data analysis. Then, the quantitative strand will be described in a similar way, including the data source, data collection procedures, and data analysis. The fifth component of this chapter will include an explanation of the trustworthiness and validity measures that were employed to ensure legitimation of the study. The chapter will conclude with a summary of the study.

This research methodology described in this chapter sought to answer the following research questions:

*Research Question 1:* How do middle school students with high-incidence disabilities and proficient writers generate ideas when given a persuasive writing prompt?

*Research Question 2:* To what extent does the use of the TBGO change the idea generation processes for middle school students with high-incidence disabilities and proficient when given a persuasive writing prompt?

*Research Question 3:* To what extent do middle school students with high-incidence disabilities differ in the number of ideas generated, the total number of written words, and writing quality when given a persuasive writing prompt when writing with and without the TBGO?

*Research Question 4:* To what extent do middle school proficient writers differ in the number of ideas generated, the total number of written words, and writing quality when given a persuasive writing prompt when writing with and without the TBGO?

*Research Question 5:* To what extent do middle school students with high-incidence disabilities and proficient writers differ in their idea generation processes in relation to the number of ideas generated when given a persuasive writing prompt when writing with and without the TBGO?

## **Participants**

Participants contributed to both qualitative and quantitative data at the same time point, therefore, the mixed methods research sampling design was a concurrent design using identical samples (Onwuegbuzie & Collins, 2007). This sampling design is credited with being the most frequently used in mixed methods studies conducted in the social and behavioral sciences (Collins et al., 2007). Further, the concurrent design using identical samples operates in a manner in which both the qualitative and quantitative data is collected at approximately the same time (i.e., concurrently) allowing the collection of

one type of data (e.g., qualitative data) to function independently of the other type of data (e.g., quantitative; Onwuegbuzie & Collins, 2007).

### ***Sampling and Inclusion Criteria***

Student participants from the school site were recruited using purposive sampling, which helps gather ‘information-rich’ cases that can provide in-depth insight into the subject(s) of the study (e.g., Glesne, 2006; Maxwell, 2005). All students in the respective resource classes for students with high-incidence disabilities and proficient writers were expected to complete the instructional activities of the study, and those who consent to be participants would have their data collected and used for analyzing findings. There were 12 students in the resource class from which students with high-incidence disabilities were drawn from. All 12 of these students met the inclusion criteria for the study, however, three students chose not to participate. Eighteen of the 20 students in the general education resource class met the inclusion criteria. Of those 18 students, only 11 chose to participate. The nature of the comparative case analysis, which was part of the research design mentioned in the next section, constitutes the use of two or more cases that share a common goal to be analyzed for similarity, differences, and patterns (Goodrick, 2020). Thus, the nature of the sampling and inclusion criteria of participants was drawn from two cases. The four sampling parameters for selecting participants from Case 1 were students who (a) have a high-incidence disability as evidence by an eligibility determination of Other Health Impairment (OHI) including those with ADHD/ADD, Learning Disability (LD), Emotional/Behavioral Disorder (EBD), or Autism Spectrum Disorder (ASD), (b) receive special education services while accessing

the general curriculum, (c) have documented writing difficulties based on their current IEP's present level of academic achievement and functional performance and/or current IEP goals, and (d) participate in English/Language Arts class with either only other peers with disabilities (i.e., a self-contained setting, which is a setting in which students receive specialized instruction only with other students who receive special education services) or in a co-taught setting (i.e., a service delivery option, usually consisting of a general and special education teacher, for students to access the general curriculum in the general education setting with typical students).

The three sampling parameters for selecting participants from Case 2 were (a) proficient writers as determined by scores on the end of the year state assessment and student work samples, (b) receives language arts instruction in an inclusion/co-taught class or in an honors class, and (c) does not have a medical diagnosis or eligibility determination of a disability. Students from Case 2 were nominated by their respective English/Language Arts teachers who have determined students who demonstrate advanced writing skills. Advanced writing skills are defined as the production of clear and coherent writing, in which the development, organization, and style are appropriate to task, purpose, and audience (Common Core, 2012). Students from both Case 1 and Case 2 were in the eighth grade. A summary of a comparison for participants in Case 1 and Case 2 is provided in Table 2.

**Table 2**

*Comparison Table of Participant Sampling Parameters*

Case 1	Case 2
8 participants	11 participants
High-incidence disability and accesses the general curriculum	Typical learner who does not have a medical diagnosis or eligibility determination of a disability
Struggling writer with documented writing difficulties receiving instruction in English/Language Arts class with only other peers with disabilities or in a co-taught class	Proficient writer receiving English / Language Arts instruction in a co-taught or inclusion class or in an honor setting

***Sample Size***

While “there are no rules for sample size in qualitative inquiry” (Patton, 2002, p. 244), a narrower level of inquiry (i.e., the phenomenon of idea generation) with more instances (i.e., instances of data collection) being captured (Yin, 2015), such as eight to 11 per case, would sensibly allow for “selection to the point of redundancy” (Lincoln & Guba, 1985, p. 202). Instances of data collection will be described in the procedures section but include the use of think alouds while simultaneously producing a writing sample. With eight and 11 participants per case (e.g., students with high-incidence disabilities and proficient writers) and three instances of data collection per participant, this study gleaned between 48 and 66 instances across multiple measures, which falls within the accepted range of 25 to 50 instances (Yin, 2015). Additionally, in a comparative case approach, Eisenhardt (1989) recommended a sample size between four and 10 to avoid drawing conclusions based on idiosyncratic situations, which would allow for an acceptable sample size of eight and 11 per case.

Given the quantitative component of the mixed methods design, a sample size of eight and 11 participants per case (students with high-incidence disabilities, proficient writers) allowed for nonparametric statistical analyses (e.g., Wilcoxon signed-rank, Mann-Whitney U), which will be described later in the chapter. Such analyses would provide additional insight into the comparisons of writing outcomes within and among the two cases under investigation.

Students with high-incidence disabilities (Case 1) experienced an attrition rate of 11% ( $n = 1$ ). Proficient writers (Case 2) experienced an attrition rate of 17% ( $n = 2$ ). Attrition is defined as students who originally consented to participate in the study, but either voluntarily decided not to finish the study or, due to course demands, were not able to complete the study. The one student with a high-incidence disability who voluntarily decided not to participate did so because he “didn’t want to be a lab rat.” One proficient writer who did not complete the study did so because he no longer wanted to participate while the other determined he had “too much other work.” Although there is no standard for acceptable attrition rates (Marcellus, 2004), rates exceeding 20% typically threaten bias and validity (Polit & Hungler, 1995).

### ***Demographics***

Upon implementation of the study, the researcher collected demographic data for all participants. All the participants in the study were in the eighth grade. The demographic data for students with high-incidence disabilities for Case 1 included race/ethnicity, gender, eligibility determination, if the student was an English Learner (EL), the English/Language Arts setting the student participated in, and pre-assessment

data from The Woodcock-Johnson Writing Fluency (W-J III; Woodcock et al., 2001b) assessment (see Table 3).

**Table 3**

*Demographic Data for Students with High-Incidence Disabilities (Case 1)*

Student	Race/ Ethnicity	Gender	Disability	EL (yes/no)	ELA Setting	WJIII AE	WJIII GE
Tony	Black/African American	Male	SLD	No	SC	9-8	4.2
Brandon	Hispanic	Male	OHI	Yes	SC	10-4	4.9
Zack	Black/African American	Male	SLD	Yes	SC	7-2	2.1
Noah	Hispanic	Male	ASD	Yes	SC	7-5	2.4
Joy	Black/African American	Female	ED	Yes	Co- Taught	12-1	6.6
Juliet	Black/African American	Female	OHI	No	Co- Taught	14-7	9.2
Ellie	Black/African American	Male	OHI	No	Co- Taught	6-3	1.4
Drew	White	Male	OHI	No	Co- Taught	9-8	4.2

*Note. SLD = Specific Learning Disability, OHI = Other Health Impairment, ASD = Autism Spectrum Disorder, ED = Emotional Disability, EL = English Learner, ELA = English/Language Arts, SC = self-contained, WJIII = Woodcock Johnson III Test of Writing Fluency, AE = Age Equivalence, GE = Grade Equivalence*

The demographic data for proficient writers for Case 2 included race/ethnicity, gender, eligibility determination, if the student was an English Learner (EL), the English/Language Arts setting the student participated in, and pre-assessment data from The Woodcock-Johnson Writing Fluency (W-J III; Woodcock et al., 2001b) assessment

(see Table 4). It is noteworthy to mention the inherent systemic issues surrounding the demographic data of the students with high-incidence disabilities and proficient writers. These data demonstrate the overrepresentation of Black students and boys in special education, while the proficient writers are predominately female and White.

**Table 4**

*Demographic Data for Proficient Writers (Case 2)*

Student	Race/ Ethnicity	Gender	EL (yes/no)	ELA Setting	WJIII AE	WJIII GE
Julie	White	Female	No	Honors	>20	>18.0
Natalie	Hispanic	Female	Yes	Academic	>20	12.9
Stella	White	Female	No	Honors	13-2	7.7
Aidan	White	Male	No	Honors	13-9	8.4
Becky	White	Female	No	Honors	>20	18.0
Joseph	Hispanic	Male	Yes	Academic	11-2	5.7
Juliana	White	Female	No	Honors	14-7	9.2
Graham	White	Male	No	Academic	12-7	7.1
Kylie	White	Female	No	Honors	14-7	9.2
Leah	Black/African American	Female	No	Honors	11-2	5.7
Soraya	Asian	Female	Yes	Honors	15-7	10.1

*Note. EL = English Learner, ELA = English/Language Arts, WJIII = Woodcock Johnson III Test of Writing Fluency, AE = Age Equivalence, GE = Grade Equivalence*

***Protection of Human Rights and Informed Consent***

Institutional Review Board (IRB) from George Mason University was obtained through an on-going, multi-year grant funded by the US Department of Education Office

of Special Education (OSEP). Additionally, Institutional Review Board (IRB) approval was obtained from the participating school district. Parent consent (see Appendix A) and student assent (see Appendix B) was obtained prior to the study's implementation.

### **Study Setting**

This study took place in-person at a middle school in a suburban area in the mid-Atlantic region of the United States. The participating school district is the third largest in the state, with 97 schools and a student enrollment nearing 82,000. Additional information about the setting, such as the instructional context and the writing environment will be provided in the following sections.

#### ***Participating Middle School***

The participating middle school serves over 1,200 students in grades six through eight with 25% of the student population being described as “economically disadvantaged” and a minority enrollment of 52%. The dominant ethnicity/race for the school is White, making up 41.6% of the population. Hispanic is the second largest ethnic/racial group with 27.3% of the student population. Next are Asian at 13.2%, Black/African American at 9.3%, two or more identified ethnicities/races at 7.5%, and “other” including fewer than 10 students. Any subgroup of fewer than 10 students was excluded from the district data reporting to adhere to the district's data privacy regulations. The school site for this study included 15.3% of students with disabilities.

#### ***Specific Settings***

The students from Case 1 and Case 2 engaged in the research procedures (think aloud training, instructional lessons, and independent writing time) in their resource

classes for instruction. The resource class in the context of this school setting is essentially a “study hall,” which is an 85-minute period set aside every other school day for students to receive academic help, complete homework, etc. Students with high-incidence disabilities were in a “self-contained” resource class, which means their resource class had only other students with high-incidence disabilities. In contrast, proficient writers were in a general education resource setting, which means their resource class was with other peers without disabilities. The instances of data collection for the think alouds, which manifested both the qualitative and the quantitative data, took place in a one-on-one setting in either the school library or a vacant classroom. If the library was unavailable, then the researcher engaged in think alouds (i.e., students verbalizing all that comes to mind when executing a task), with the students in a vacant classroom. Details pertaining to the think aloud trainings, the instructional lessons, the independent writing time, and the think alouds will be described in the *procedures* section. Because the researcher was the intervener, it was not necessary to collect demographic information of the instructional staff in each classroom for each case (e.g., number of years teaching experience, highest degree obtained, age, gender). Instead, the researcher’s positionality will be described.

### **Instructional Environment**

This section will describe the instructional environment for the study, which will include the materials used. This section will include the writing context using a technology-based graphic organizer, the writing prompts that were provided throughout

the study, and additional materials needed, which were embedded in the instructional lessons that were implemented.

### *Writing Context*

During the study, participating students explored the genre of persuasive writing using a technology-based graphic organizer (TBGO) with embedded evidence-based strategies (e.g., self-regulated learning strategies), video models, Universal Design for Learning (UDL) supports, and opportunities for data-driven decision-making. The TBGO was developed in collaboration with school district partners, teachers, and students with the purpose of supporting students, especially those with high-incidence disabilities, through the writing process for persuasive writing. Further, this comprehensive, evidenced-based approach has been validated for both students with high-incidence disabilities and those without disabilities from third through 12th grade (Boykin et al., 2019; Brady et al., 2021; Evmenova et al., 2016, 2020; Regan et al., 2017, 2021).

The TBGO is a web-based graphic organizer that is accessible through a Chrome Browser. This graphic organizer is specific to the genre of persuasive writing and offers a mnemonic, IDEAS (Identify your opinion, Determine three reasons, Explain why or say more, Add transition words as you go, Summarize), that provides an organizational structure and memory tool for persuasive elements/writing quality. Additional details of the TBGO will be described next and a screen shot of the TBGO is provided in Appendix C.

**The TBGO.** The TBGO systematically assists students through five steps of the writing process: (1) prompt selection and goal setting, (2) organizing ideas according to

the IDEAS mnemonic, (3) “copy” complete sentences into a paragraph, (4) editing and revising, and (5) self-evaluating. In the first step, students will examine several cues to determine the prompt they should choose. For example, they will determine which prompt(s) they can pick a side, have interest in writing about, and then ultimately, which prompt they will select. In most cases, students will choose from one of two opinion-based persuasive writing prompts that have been predetermined by the teacher.

***Step 1 – Choose an Essay Goal.*** In step 1 the students will also choose an essay goal and a personal writing goal. A drop-down provides the student with three essay goal options from which to choose: (1) I will include 3 reasons and 1 explanation, (2) I will include 3 reasons and 2 explanations, and (3) I will include 3 reasons and 3 explanations. The TBGO also provides a drop-down for students to choose an appropriate personal writing goal. This drop-down offers several options, some of which include “I will use correct ending punctuation” and “I will check the spelling of unfamiliar words.”

***Step 2 – Brainstorming Activity.*** The second step of the TBGO involves a brainstorming activity, in which the students are to choose one (or multiple) of six brainstorming strategies to help document ideas related to the prompt. These six brainstorming strategies include (1) visualize images, (2) search images, (3) draw a picture, (5) make a web, (5) make a list, and (6) talk about it. Teachers are instructed to provide students with space and materials to employ these brainstorming options outside of the TBGO, such as paper or digital platform for lists, webs, or pictures. Student writing takes place in the second part of the graphic organizer; it is organized into a table with four columns, (1) the IDEAS mnemonic in the left column (2) “key words” in the

left middle column, (3) “complete sentences” in the right middle column, and (4) a self-monitoring checklist in the right column. As mentioned previously, the graphic organizer contains the mnemonic, IDEAS, which provides students with a memory tool that organizes their brainstormed ideas into the persuasive parts denoted by the IDEAS mnemonic. Students are directed to include key words from their brainstorm in reference to each of the appropriate IDEAS letters in respect to their meaning and persuasive element. This scaffold prompts students to generate a complete sentence from the key words of their brainstorm. Students self-monitor their progress in the fourth column with a checkbox to ensure that they have included each persuasive part in their essay.

***Step 3 – Populate Text into Completed Paragraph.*** Once the students complete the table, they will be prompted to click on a “copy” button, step 3. Clicking on the “copy” button will automatically populate the text from the “complete sentences” column into a completed paragraph on the next page.

***Step 4 – Revise and Edit Essay.*** In step 4 students will have an opportunity to revise and edit their essay. Students can activate the text-to-speech feature by double clicking on their essay to hear their text read aloud. During this step, students also have the option to view an example of a completed essay.

***Step 5 – Self-Evaluation Component.*** The final step, step 5, is the self-evaluation component. This is where students will evaluate how well they think they did on their essay. The TBGO provides students with a word count of their essay and prompts students to self-evaluate their essay on eight elements of writing. These elements include (1) I have a topic sentence that includes my opinion about the prompt, (2) I have three

different reasons to support my opinion, (3) I have details and adjectives that explain my reasons, (4) I have NOT repeated words too often, (5) I have capital letters at the beginning of all my sentences, (6) I have correct ending punctuation, (7) I have checked the spelling of unfamiliar words, and (8) I have listened to my essay to make sure it makes sense. Students will read the above statements (or listen to an audio recording of the statements) and choose one of the self-evaluation options in answering them: got it! Or almost there. The self-evaluation options of “got it!” and “almost there” are associated with an image of a smiley face that is either indifferent (almost there) or smiling (got it!). Finally, students will be directed to choose a new personal writing goal. Additionally, students will receive positive feedback either from a staff member or a peer that highlights an area of their writing that makes them a “great writer.”

In addition to the mnemonic (e.g., IDEAS), self-regulated learning strategies (e.g., goal setting, “check your work,” “evaluate”), drop-down features, a copy and paste feature, text-to-speech, audio comments, and color-coded support features, the TBGO also includes nine content video models that address specific areas of the writing process throughout the organizer graphic. These learning objectives include: (a) introduction to the genre of persuasive writing, (b) select a prompt, (c) brainstorm, (d) identify your opinion, (e) determine reasons, (f) explanations, (g) summarize, (h) revise, and (i) edit. The content video models not only provide opportunities to practice or to reinforce concepts of the writing process, but also individualized high-quality instruction (Basham et al., 2016).

The TBGO was used as an instrument to investigate student persuasive writing outcomes (total written words, writing quality) and idea generation quality and quantity for Case 1 and Case 2 but was not evaluated on its effectiveness. The following sections will list “pretest”, “posttest with the TBGO” and “posttest without the TBGO” in quotation marks to indicate to the reader the different writing environment conditions as opposed to true treatment conditions.

### ***Writing Prompts***

Each of the prompts was adapted from released Virginia Department of Education (VDOE) writing Standards of Learning (SOL) assessments from grades three, five, and eight. Writing prompts for the persuasive essays were randomly assigned for each session across all conditions without replacement. Prompts were selected from a larger pool of 35 prompts (see Appendix D). Each of the prompts contained a similar structure in which the problem was addressed (e.g., some kids your age believe they should make the rules for the school), followed by a directive (e.g., write whether kids your age should make the rules for the school). The prompts have been validated and were adopted from previous studies using the TBGO (e.g., Evmenova et al., 2016, 2019). All students from Case 1 and Case 2 received identical prompts during the training, “pretest,” “posttest” with the TBGO, and the “posttest” without the TBGO.

Essay prompts were administered at “pretest,” “posttest” with the TBGO, and “posttest” without the TBGO. Students were provided with two prompt options and asked to select one for writing an essay. Students’ essays were independently typed by students

and evaluated for the number of ideas generated, writing quality, and the total number of written words.

### *Instructional Lessons*

The researcher provided instruction to each of the students from Case 1 and Case 2 during their respective resource classes, which is 85 minutes in duration. This instruction, for both cases, was conducted in a whole-class manner.

Instructional lessons followed a model of gradual release of responsibility (GRR; Pearson & Gallagher, 1983; Webb et al., 2019), in which the instructor scaffolded responsibility, beginning with modeling (“I do”), and progressing to guided practice (“We do”), and ultimately independent practice (“You do”). The six instructional lessons, which will be detailed below, included introducing the genre of persuasive writing, orientation to the TBGO, modeling how to use the TBGO, opportunities for guided practice, opportunities for independent practice, and transitioning to writing without the TBGO. The participating students were introduced to the genre of persuasive writing and oriented to and trained on how to use the TBGO over the course of six lessons ranging from 20-35 minutes per session. Because the goal of this study was not to determine the effectiveness of the TBGO, students were not required to demonstrate mastery of the lesson components. Students then engaged in four to five independent writing sessions using the TBGO. A screen shot of the PDF of the Google Slides instructional lessons are also provided in Appendix E.

The rationale for not adhering to a more prescriptive or scripted lesson outline was to allow for lessons to be expanded over multiple class periods or combined and

modified to best meet the learning needs of specific learners (Hardy et al., 2019), especially given the two cases with different learning environments (students with high-incidence disabilities in a resource setting with only other peers with disabilities, students in a general education resource setting with only other peers without disabilities). Additionally, the rationale for not providing scripted instruction reflects strong respect and reliance on teacher judgement (or in this case, the researcher), and situates writing development as a process (Harris et al., 2015; Harris & Graham, 2017). That said, each lesson was broken into critical components that the researcher adhered to for fidelity of implementation (see *Fidelity of Implementation* in Validity section)

**Lesson 1 – Genre of Persuasive Writing.** The first lesson provided students with a common understanding of the genre of persuasive writing and the term graphic organizer. The researcher presented the root words “per” and “suade,” and the meaning of the root word “per” as *thoroughly* and “susde” as *to urge* or *argue* to ignite a discussion on what the word “persuade” might mean, especially considering the two root words. After discussing this term, the intervener ultimately presented the definition of “persuade” as “to convince” based on the meaning of the root word “per” as *thoroughly* and “suade” as *to urge* or *argue*. Examples of the word “persuade” were used in a sentence by the intervener and students were encouraged to volunteer examples as well.

This process was repeated with the root word “graph” and the word “graphic organizer.” The meaning of the root word “graph,” *to write*, was presented. Students shared what they thought a graphic organizer meant and its uses before the intervener presented the definition of graphic organizer as a tool to organize writing. Students had

an opportunity to share about graphic organizers they have used before, such as a Venn diagram, brainstorming web, and T-Charts. The intervener ultimately connected the words “persuade” and “graphic organizer” to provide an understanding for the meaning and use of a graphic organizer for persuasive writing.

During this lesson, students also familiarized themselves with the TBGO by looking at a completed TBGO example (see Appendix F) and having the opportunity to explore the features of the graphic organizer independently. The researcher presented the completed example of the graphic organizer to the students that is embedded in the TBGO while they independently looked at the structure, color coding, icons, etc. without any expectation on what specific features to look for. Next, the researcher transitioned to having students explore a blank TBGO on their devices. This was also done without any expectations for specific features of the tool that the students should notice. Students used this initial orientation to the TBGO as exploratory and to openly discover and “play” with the features, including writing in the cells, clicking on icons, observing the “text hints,” etc. The use of this exploratory “play” is a medium for mastering technology tools (Edwards, 2019). Lastly, students discussed as a class what they noticed about the TBGO, including its features (e.g., text-to-speech, audio comments, content videos, how-to videos). A fidelity of implementation checklist for Lesson 1 is provided in Appendix G.

**Lesson 2 – Review of Persuade and Graphic Organizer Vocabulary.** The researcher revisited and reviewed the “persuade” and “graphic organizer” vocabulary by having students share what they recalled about each of the terms. The researcher ensured

that there was a class consensus of the definitions for the terms and restated the definitions of each. Students then engaged in a whole-class dialogue, in which they volunteer to share a specific time they tried to persuade someone, either verbally or through writing. They also recalled previous graphic organizers for persuasive writing. The researcher then showed the students a video that is embedded in the TBGO (Introduction) that describes how the technology-based graphic organizer can be used for persuasive writing, while emphasizing that the genre of persuasive writing entails trying to convince someone of your opinion. Next, students completed a scavenger hunt (see Appendix H), searching for and identifying particular features of the graphic organizer, including audio comments, text-to-speech, and video models. This provided a more structured avenue for exploring the TBGO than Lesson 1. The researcher provided the answers to the Scavenger Hunt and answered any questions the students had about the TBGO.

Lastly, during this lesson, students were introduced to the IDEAS (e.g., Identify your opinion, Determine three reasons, Explain why or say more, Add transition words as you go, Summarize) mnemonic, which helps them include all persuasive elements in their essays. The researcher taught this mnemonic to students by explaining each letter of the mnemonic one at a time. Additionally, the researcher demonstrated how the features of the mnemonic are embedded in the sample essay that was introduced in Lesson 1 (see Appendix I) by highlighting each of the components in the IDEAS mnemonic and circling the use of transition words. A fidelity of implementation checklist for Lesson 2 is provided in Appendix J.

**Lesson 3 – IDEAS Mnemonic.** The researcher reviewed the IDEAS mnemonic by surveying the students’ recall of each of the persuasive elements within the mnemonic and providing any assistance or corrections. The researcher then provided another sample essay (see Appendix K) for students to identify pieces of the mnemonic through guided practice.

Next, the researcher modeled how to complete the TBGO using a think aloud with student input. This modeling was projected using a SmartBoard to allow students to view and monitor progress as the TBGO was being completed. The researcher, with input from the students that was shared by volunteering participants, responded to either one of these two prompts, (a) Some people believe that kids should get paid for playing sports. Write an essay whether or not you believe kids should get paid for playing sports or (b) Many people believe we should seek habitation on other planets. Argue whether or not we should try to begin populating Mars. The researcher then responded to the prompt in writing and modeled all five of the TBGO parts, including (a) pick a goal, (b) fill out the table, (c) copy, (d) revise and edit, and (e) self-evaluate. The researcher also demonstrated during this time all important features of the TBGO that were emphasized during the scavenger hunt, including audio comments, text-to-speech, and video models. During this modeling session the intervener was thinking aloud, following along with the TBGO, and providing idea generation strategies as the TBGO provided prompts for the writer to brainstorm. Additionally, while these idea generation processes were modeled, they were not explicitly emphasized. For example, the intervener mentioned, “well, I grew up playing sports and I have a lot of personal experiences playing sports, so I think I

am going to choose that prompt to write about.” A fidelity of implementation checklist for Lesson 3 is provided in Appendix L.

**Lesson 4 – Review of Persuasive Elements.** This lesson began with a quick review of the persuasive elements included in the IDEAS mnemonic and assistance and correction was provided as needed. The researcher asked the students to volunteer their recall of what each of the letters in the IDEAS mnemonic represented. During this lesson, students engaged in a guided practice with support from the researcher. This lesson mirrored Lesson 3, however, the researcher was providing less input, as more responsibility was released to the class to provide input on how to complete the TBGO. The researcher and the students responded to either one of these two prompts, (a) Some people believe 12-year-olds can babysit by themselves. Using specific details and examples to support your position, argue whether or not 12-year-olds should be able to babysit or (b) Some people believe cell phones should not be allowed while driving. Argue whether or not cell phones should be used while driving. The researcher then responded to the prompt in writing and modeled all five of the TBGO parts, including (a) pick a goal, (b) fill out the table, (c) copy, (d) revise and edit, and (e) self-evaluate. The researcher also demonstrated during this time all important features of the TBGO that were emphasized during the scavenger hunt, including audio comments, text-to-speech, and video models. Additionally, during this time, students were able to work simultaneously on their personal devices in response to the same prompt, however, they were able to provide their own reasons and explanations that might have differed from the class consensus being modeled. Again, it is important to note that while more

responsibility was released to the students, the intervener offered through the modeling, idea generation processes, such as empathetic experiences of texting while driving. A fidelity of implementation checklist for Lesson 4 is provided in Appendix M.

**Lesson 5 – Students Independently Complete TBGO.** During this lesson, students were given time to independently complete the TBGO and compose an essay. The intervener offered assistance and reviewed the features of the technology-based graphic organizer as needed and on an individual basis. Students with high-incidence disabilities engaged in Lesson 5 for five independent writing sessions using the TBGO. Proficient writers engaged in Lesson 5 for four independent writing sessions. During these lessons, the researcher preloaded prompts for students to choose from (see Appendix D) within the TBGO and students independently responded to the prompts. A fidelity of implementation checklist for Lesson 5 is provided in Appendix N.

**Lesson 6 – Students Taught to Transfer Skills.** For the last lesson, which occurred after the students had engaged in four to five independent writing sessions using the TBGO, the researcher taught students how to transfer the writing and self-regulation learning skills learned with the TBGO to when the TBGO is removed or not available (i.e., how to use the IDEAS mnemonic, goal setting, self-monitoring, self-evaluation, transition words without the TBGO). The researcher demonstrated writing a persuasive essay without the TBGO supports in a Google Doc and modeled how to recreate an IDEAS mnemonic on their own, without technology. For example, the intervener recreated the IDEAS mnemonic on the left-hand side of the blank document. Then, the researcher, with student input, responded to either one of these two prompts, (a) Some

people believe high school students should have to take an exit exam. Using specific details and examples to support your position, argue whether or not high school students should take an exit exam or (b) Some people believe the driving age should be fourteen. Argue whether or not the driving age should be fourteen. The intervener's think aloud during this time included selecting a prompt, picking an essay goal, writing an essay while referencing the IDEAS mnemonic on the left-hand side, self-monitoring, and self-evaluating. Similar to Lessons 3 and 4, during the modeling, the intervener presented idea generation processes during the think aloud. More specifically, the intervener offered ideas in the areas of reminiscing about being fourteen years old but also shared empathetic concerns about how some 14-year-olds are care takers and being able to drive may provide the family with fewer hardships. A fidelity of implementation checklist for Lesson 6 is provided in Appendix O.

### ***Lesson Fidelity***

Implementation of an intervention is dependent on the interventionist adhering to the components of the intervention with high fidelity so that it is delivered as intended and delivered with quality (Johnson et al., 2014). Structural fidelity measures whether the critical pieces of an intervention are delivered (Gersten et al., 2005; Odom, 2009). While the use of the TBGO is not necessarily intended to be used as an intervention, but rather a context for the writing environment, structural fidelity remains valuable given the comparative nature of the study. As such, the occurrences of implementation may be documented via observation or self-reported by the interventionist (Harn et al., 2013). Lesson fidelity will be further described in the *Validity* section.

## **Research Design**

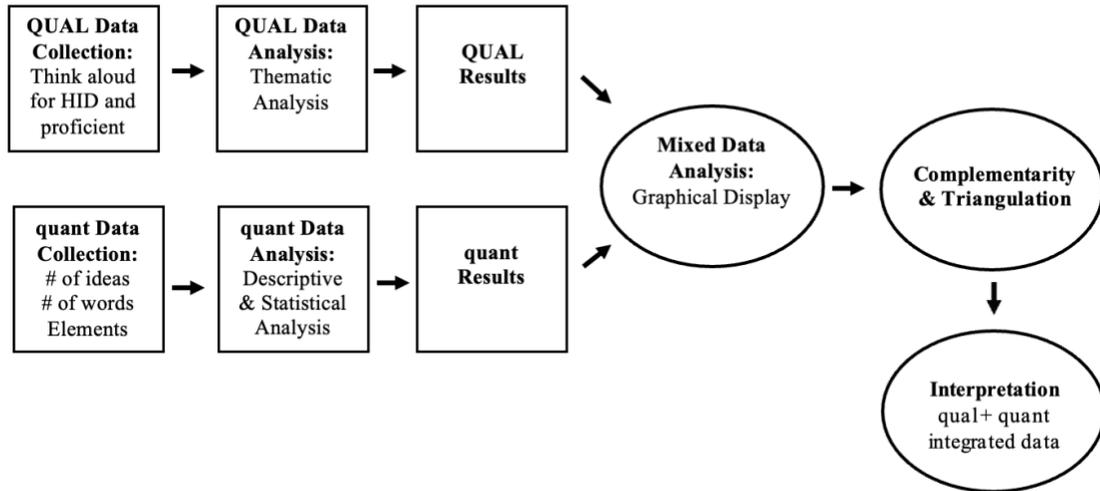
The research design for this study was a comparative case analysis comparing students with high-incidence disabilities (Case 1) and proficient writers (Case 2) using a concurrent mixed methods design with priority given to the qualitative strand (Creamer, 2017; Onwuegbuzie & Collins, 2017). Creswell and colleagues (2006) provide four conditions that concurrent mixed methods design adhere to including (a) both the qualitative and quantitative data are collected separately but at approximately the same point in time, (b) neither the qualitative nor quantitative data analysis is dependent on the other during the data analysis phase, (c) the results of each analysis are not consolidated and interpreted until both sets of data (qualitative and quantitative) have been collected and analyzed separately, and (d) after collecting and interpreting data from quantitative and qualitative components, a meta-inference(s), which will be described in the *Mixed Analysis* section, is drawn to integrate the inferences and findings from the separate qualitative and quantitative data.

### ***Description of the Design***

The research goal for this exploratory study drew on Newman and colleagues' (2003) framework involving adding to the knowledgebase, understanding a complex phenomenon, and generating new ideas. Given the predominantly inductive nature of the investigation of the idea generation phenomena, the major objective of the study was exploratory (Johnson & Christensen, 2004) to develop tentative hypotheses. The rationale for combining both quantitative and qualitative methods, drawing on Greene and colleagues (1989) framework, was that of complementarity (i.e., use of quantitative and

qualitative approaches “to measure overlapping but also different facets of a phenomena; p. 258), and triangulation (i.e., use of qualitative and quantitative methods to pursue convergence of findings).

The qualitative component was dominant, with the quantitative component embedded (i.e., involving collection and analysis of the number of ideas generated, the total number of written words, and writing quality) within the qualitative component. As such, a qualitative-dominant mixed methods design was used (Johnson et al., 2007). Using Leech and Onwuegbuzie’s (2009) typology, this study represents a fully mixed concurrent dominant status – qualitative design, where the qualitative and quantitative elements occur at approximately the same point in time, with the qualitative phase being given higher priority and mixing occurring within and across data collection, analysis, and interpretation stages. The use of both qualitative and quantitative approaches adds significant enhancement (i.e., the mixing of qualitative and quantitative techniques to maximize researchers’ interpretations of data; Collins et al., 2006). A procedural diagram (see Figure 4) is provided to illustrate the steps of the research process (i.e., data collection, data analysis, data interpretation) to better convey details of the complexity of the mixed methods design and to guide the implementation of the research method (Morse, 2010; Tashakkori & Teddlie, 2003).



**Figure 4.**

*Procedural Diagram for the Mixed Methods Comparative Case Analysis*

### **Positionality**

The researcher believes it is the responsibility of the researcher to describe their positionality to understand the core essence of the backdrop to their inquiry, research, methodological approach, findings, and discussions. It is the researcher's desire that providing authentic transparency of paradigm and theoretical assumptions will initiate critical reflexivity among both producers and consumers of research. Adopting a critical practice can place emphasis on moral and ethical frameworks that provide practical and sensible solutions to complex problems. As a special educator and a faculty member in higher education, the researcher believes it is critical to identify ways to best support students of all backgrounds and ability levels within an inclusive environment. This research design represents the researcher's desire to include the insights of arguably the most influential stakeholders in education, the students, alongside quantitative data, to

provide an understanding of a phenomena that moves towards opportunities for providing instructional strategies that meet the needs of all learners.

### **Epistemological Underpinnings**

Pragmatic epistemology is grounded in the idea that the nature of truth and reality is situated on practical understandings of concrete, real-life issues (Sharma et al., 2018). Often this approach is visible within qualitative research methods with an interpretivist understanding of a reality that is socially constructed, while the fingerprint of pragmatism emphasizes the value and meaning, or “truth” of research data through the examination of its practical consequences (Morgan, 2014). This lens is particularly useful in organizational settings, such as educational systems, in which practice is closely interwoven in the ways in which knowledge is produced and consumed. This idea extends beyond a fixed understanding of what it means to know and to learn, and instead, allows for a more dynamic understanding that has the potential to transform (Biesta, 2010). Additionally, it allows educators and educational researchers to explore and understand connections between knowledge and action within certain contexts, such as adolescent writing.

The researcher’s approach to this research was primarily a pragmatic one. In this vein, the researcher subscribed to a paradigm that emphasized choosing a method that suits the needs of the setting and/or the audience. It is the researcher’s conviction that the methodological purpose and audience delimits the choice of suitable methods and that all inferences and conclusions are interpretive. Therefore, a mixed methods study was identified as the most ideal method for this study.

## Qualitative Strand

This section will provide an in-depth explanation of the qualitative phase of the mixed methods design. Procedures for validation and employment of the think aloud for the qualitative component will be described. Next, the data collection procedures and data analysis will be explained. An implementation timeline detailing the timeline for the completion of the study can be found in Table 3.

**Table 5**

*Implementation Timeline*

Week	Task(s)
Week 1:	Woodcock Johnson Writing Fluency Assessment Think Aloud Training for Case 1 & Case 2
Week 2:	Think Aloud “Pretests” for Case 1 & Case 2 TBGO Instruction (1-2 sessions)
Week 3:	TBGO Instruction (2-3 sessions)
Week 4:	Independent Writing (2-3 sessions)
Week 5:	Independent Writing (2-3 sessions)
Week 6:	Think Aloud “Posttest” w/TBGO for Case 1 & Case 2 Think Aloud “Posttest” w/out TBGO for Case 1 & Case 2
Week 7:	“Posttests” if needed

*Data Source – Think Aloud*

The term “think aloud protocol” is defined as a type of research data used in empirical research processes in which participants are asked to perform a task and to verbalize whatever crosses their mind during the task performance (Jääskeläinen, 2010). This method’s etiology is derived from cognitive psychology (e.g., Ericsson & Simon 1984, 1998) and has been used in educational research to document the reading processes of expert readers (e.g., Shanahan & Shanahan, 2012) and self-regulation processes (e.g., Greene et al., 2011).

As used by Ericsson and Simon (1984), the researcher does not generally interact with the participants after the initial instructions on how to complete the task, and explicit instructions are given on what should be said to participants, because ‘The subject’s TA (think aloud) protocol... may well be influenced by the exact wording of the TA instructions’ (Ericsson & Simon, 1984, p. 80). Researchers implementing a think aloud are advised to give general instructions, (e.g., simply to ‘think aloud’, and to verbalize ‘everything that passes through your head’). Ericsson and Simon urge caution about changing the verbalization instructions in the light of evidence that this may change the structure of the thought process itself. However, the researcher had reservations as to whether this would provide meaningful data or merely a rambling discourse. One recent research study suggested that interrupting participants undertaking problem-solving processes had no significant impact on reactivity of the participants when compared to a standard think aloud protocol (Fox, 2015; Karahasanovic et al., 2006). Thus, the methodology that was adopted was therefore a ‘prompted think aloud’ with the aim of encouraging students to articulate their thinking as clearly as possible and to enhance the

data collected (Cotton & Gresty, 2006). Varying degrees of prompting were employed as a reactionary mechanism to how much prompting each student required. Additional think aloud procedures will be described next.

The think aloud protocol was piloted with six middle school students with ( $n = 3$ ) and without disabilities ( $n = 3$ ), and adjustments in language and delivery were made to ensure access and feasibility.

### ***Data Collection Procedures – Think Aloud***

In order to conduct the think alouds systematically, this study followed McKay's 2006 suggested procedures, including (a) familiarizing the participants with the think aloud through a practice session, (b) ensuring all equipment necessary to employ the think aloud are available, (c) providing simple and clear directions for participants to follow in which they need to verbalize everything they are thinking of, and (d) recoiling into the background during the think aloud, and only providing verbalizations or prompts when the participants stop their verbalizations in order to re-engage participants.

Participants from each case (students with high-incidence disabilities and proficient writers) were trained by the researcher on how to engage in a think aloud during a whole-class session lasting about 30 to 45 minutes. During this training session, the researcher modeled for the students how to perform a think aloud in response to a choice of two prompts involving writing an opinion on a favorite grocery store or asserting an opinion for a favorite sport or game. Next, the researcher engaged the students in a guided practice using a think aloud with input from the students. The students from each case employed a collective think aloud in response to a choice of two

prompts involving whether the internet is helpful or harmful or their opinion on which is the best of the five senses.

To answer the first research question regarding how middle school students with high-incidence disabilities and proficient generate ideas, students from both cases participated in a one-on-one think aloud during a “pretest” before the introduction of the TBGO and instruction centered on the genre of persuasive writing, a “posttest” with the TBGO, and a “posttest” without the TBGO. Each instance of a think aloud for each case (students with high-incidence disabilities and proficient writers) was audio recorded for later analysis. The think aloud procedures always included prompts such as “can you tell me about the prompt you chose and why,” “as you were writing, did you think of anything additional,” “is there anything else you thought of while writing that you didn’t share,” and “the ideas that you are coming up with .... How are you getting these ideas?” If the intervener noticed that students were typing but not sharing their thought processes, she would ask, “what are you thinking now?” or “can you tell me more about that thought?”

**“Pretest” Think Aloud Procedures.** Following the Woodcock Johnson Writing Fluency Assessment, the participating students from each case engaged in a “pretest” think aloud. Participants were with the researcher in a one-on-one setting, in which they were instructed to verbalize everything that comes to mind as they write in response to one of two predetermined prompts. The researcher followed a think aloud “pretest” protocol (see Appendix P) as the students from each case individually wrote in response to one of two predetermined writing prompts. The writing environment during the

“pretest” was the use of a Google Doc with the two prompts preemptively provided on the otherwise blank document.

**“Posttest With the TBGO” Think Aloud Procedures.** After students had been oriented to and trained on how to use the TBGO, and after several independent writing sessions using the TBGO (e.g., four to five sessions), students from each case again participated in a one-on-one think aloud with the researcher. During the “posttest” with the TBGO, the researcher followed a think aloud “posttest” with TBGO protocol (see Appendix Q) that mirrored the “pretest” protocol. The writing environment during the “posttest” with the TBGO was the TBGO with two predetermined prompts provided.

**“Posttest” Without the TBGO Think Aloud Procedures.** Shortly following the “posttest” with the TBGO (e.g., one to three days after) students from each case again participated in a one-on-one think aloud with the researcher, documenting their thought processes as they respond to one of two predetermined prompts. The writing environment during the “posttest” without the TBGO mirrored that of the “pretest,” in which the students were to use a Google Doc with the two prompts preemptively provided on the otherwise blank document. The researcher followed a think aloud “posttest” without TBGO protocol (see Appendix R) which mirrored the “pretest” and “posttest” with TBGO protocols.

### ***Data Analysis – Thematic Analysis***

Because this was a qualitatively dominant mixed methods study, the analysis was inductive in nature, which primarily has a descriptive and exploratory orientation (Guest et al., 2012). This made the process of thematic analysis appropriate for analyzing the

data due to the research's aim to extract information to determine the relationship between variables and to compare different sets of evidence that pertain to different situations in the same study (Alhojailan, 2012). Thematic analysis is an analytical technique that uses the text to clearly define themes and aid the researcher in making sense of a large amount of data (Attride-Stirling, 2001). This analytic technique is a way of identifying what is common to the way ideas are generated in response to a persuasive writing prompt and of making sense of those commonalities (Braun & Clarke, 2012).

Braun and Clarke (2012) prescribed a six-phase analytic approach to thematic analysis, which the researcher adhered to during data analysis of the think alouds. During phase one, familiarize yourself with the data, the researcher became familiar with the data, which included listening to and transcribing the think alouds. The researcher listened through the audio recording before transcribing to get a general understanding for possible emergent themes. Next, the researcher transcribed the think alouds. This two-step process was an effort to engage in an initial process of data analysis that is sometimes overlooked or not described by researchers (Maxwell, 2005). After transcription, the researcher made notes, annotated the transcripts, and highlighted items of interest.

During phase two, generating initial codes, the researcher organized and grouped data into meaningful categories. In the essence of the exploratory nature of the study, open coding was used as a mechanism for stifling researcher bias. Descriptive codes were used to adhere to the content of the data and to the participants' meanings. The initial analysis of the data included simultaneously identifying categories and condensing the

meaning of long statements and compressing them into “briefer statements into which the main sense of what is said is re-phrased [sic] into a few words” (Kvale & Brinkmann, 2009, p. 205). This primary coding categorized participant statements based on themes that emerged through an initial, holistic reading of the interview transcripts.

In phase three, search for themes, the researcher shifted from codes to themes. A theme “captures something important about the data in relation to the research question and represents some level of patterned response or meaning within the data set” (Braun & Clarke, 2006, p. 82). During this phase, the researcher reviewed the coded data to identify areas of similarity and overlap between codes. This process involved collapsing or clustering codes together that seemed to share some unifying characteristic, so that they reflected and described a coherent and meaningful pattern in the data.

Phase four, reviewing potential themes, involved the researcher iteratively and recursively reviewing developing themes in relation to the coded data and the data set as a whole. During this phase, a few potential themes were collapsed together or split into more specific or coherent themes.

During phase five, defining and naming themes, the researcher defined each by its uniqueness and specificity. This phase also involved selecting extracts from the think alouds to present and analyze and then setting out the story of each theme with or around these extracts. Lastly, phase six, producing the report, involved examples of adding quotations and excerpts to support these themes, which is described using both a narrative and a visual representation with a table (see Chapter 4).

## **Quantitative Strand**

This section will provide a description of the quantitative phase of the mixed methods design, including (a) dependent variables, (b) data collection, and (c) data analysis.

### ***Dependent Variables***

This section will begin by describing the writing prompts that were provided to the students as a mechanism for retrieving data on the dependent variables. This section will then describe all the dependent measures that were used during the study to assess students in the areas of writing, including the number of ideas generated, total written words, and writing quality.

**Number of Ideas Generated.** The use of raw scores (e.g., Paulus & Yang, 2000) and Likert scales (e.g., Crossley et al., 2016) have been used as evaluative criteria for determining the number or analysis of the ideas generated in writing. For the purposes of this study, the number of ideas using a raw score was the chosen measurement to assess this writing outcome. An idea was defined as a complete or fragmented sentence which suggests or takes on an aim or purpose. Each participant's essay was appraised by two independent scorers for the total number of ideas. A raw score was obtained by adding all the ideas. The raters then excluded any repetitive ideas. The total number of ideas generated was the raw score minus any repetitive ideas.

**Total Written Words.** The total number of written words was evaluated using a standard word count in Microsoft Word. Because all essays were produced electronically, essays were copied and pasted into a Word document using the “word count” tool.

Additional procedures for appraising the total number of written words were adopted and informed by Intervention Central and includes additional scoring guidelines, such as the inclusion of misspellings and the exclusion of repeated words. For additional details on the scoring guidelines, see Appendix S.

**Writing Quality.** Each essay was scored using a holistic rubric that has been slightly modified from a previously validated rubric (Evmenova et al., 2016) specific to the use of essay scoring using the TBGO to measure writing quality (see Appendix T). Essays could earn a maximum score of 10 points. The rubric contains five elements with a description of scoring rules for each, and each element criteria ranging from 0 to 2. An essay would receive a score of 0 if it did not contain any persuasive essay elements, and a score of 10 for a completed essay with all persuasive elements demonstrated. For example, an essay worth 10 points must include the following components: (a) identified opinion, (b) at least three reasons, (c) at least three explanations (i.e., one explanation for each reason), (d) transition words, and (e) a summary sentence. An essay would not earn additional points for including more than three reasons or more than three explanations. In addition to writing quality, essays were scored by the number of ideas generated and the total number of written words.

### ***Quantitative Data Collection Procedures***

Students from each case simultaneously wrote in response to one of two prompts using either a blank Google Doc (e.g., during “pretest” and “posttest” without the TBGO) or the TBGO (e.g., during “posttest” with the TBGO) as they engaged in think alouds for the “pretest,” “posttest” with the TBGO, and “posttest” without the TBGO. These

responses provided quantitative insight to answer the third and fourth research questions regarding the idea generation processes for students with high-incidence disabilities and proficient writers and differences in the number of ideas generated and writing quality included with and without technology-based supports. The written products produced by the participants provided quantitative data including persuasive essay elements, number of ideas generated, and total written words.

**Pre-Assessment.** An additional assessment was administered prior to the implementation of the study. The Woodcock-Johnson Writing Fluency (W-J III; Woodcock et al., 2001b) assessment was administered by the researcher to each case (e.g., students with high-incidence disabilities and proficient writers) as a whole group during their resource class. The administration and scoring of this measure was done according to the W-J III manual (Woodcock et al., 2001a). The median test reliability for this measure is .88. Based on the standardization of the assessment, the administration was estimated to take between 10-15 minutes. The researcher read the directions aloud to the students, and then the participants completed the timed assessment. This pre-assessment was used as a demographic measure for describing participant attributes within and among both cases.

### ***Quantitative Analysis***

As students in both Case 1 (e.g., students with high-incidence disabilities) and Case 2 (e.g., proficient writers) engaged in the think aloud protocol, they simultaneously produced written compositions in response to one of two opinion-based persuasive writing prompts. Written compositions were evaluated on the number of ideas generated,

total number of written words, and writing quality. Non-parametric descriptive measures of central tendency (e.g., mean, median, mode), measures of variability/dispersion (e.g., range, standard deviation), as well as non-parametric equivalents (Wilcoxon signed-rank, Mann-Whitney U) were used to compare writing outcomes within and across cases.

Additional non-parametric statistical procedures were employed to analyze writing outcomes within and between groups. The number of ideas generated, the total number of written words, and writing quality were compared between the two cases using the Mann-Whitney U test, which is the non-parametric equivalent to an independent sample *t*-test. Given the writing context using a “pretest,” a “posttest with the TBGO,” and a “posttest without the TBGO,” the Wilcoxon signed-rank test, which is the non-parametric equivalent to the paired *t*-test, was used to compare the differences in the three writing outcomes (e.g., number of ideas generated, the total number of written words, writing quality) for each of the two cases from “pretest” to “posttests.”

### **Trustworthiness**

To support the trustworthiness of the findings, the researcher employed purposive selection, peer debriefing, and critical reflexivity. First, purposefully selecting participants (Stake, 2006) allowed the researcher to make choices appropriate for the research questions. Further the use of a systematic process (e.g., inclusion criteria) adds a level of rigor to the selections. This systematic process, in the form of the selection criteria for both Case 1 and Case 2 required several factors for each choice (see *Sampling and Inclusion Criteria*). This process allowed for consistency in those choices.

Second, the role of peer debriefer is one that is increasingly encouraged in qualitative methodology to improve trustworthiness and credibility in the research (Barber & Walczak, 2009). The researcher recruited a peer debriefer familiar with the study, but not involved in the implementation, to review coding of think aloud data, providing a check against biases within the analysis, and to aid with consistency, credibility, and reliability throughout the coding process. The debriefer had experience with qualitative research and thematic analysis, and provided an additional, sometimes alternative, perspective of the coding process, and to challenge the researcher to acknowledge sensitizing concepts as they may influence the work.

Lastly, Miles and Huberman (1994) considered that a key criterion for confirmability is the extent to which the researcher admits their own predispositions. This was achieved by engaging in critical reflexivity in which the researcher sought to constantly question their own approaches to the research and how it was influencing meaning - throughout the entirety of the work (Berger, 2015; Cho & Trent, 2006). This includes remaining in tune to personal reactions to the perspectives and insights that participants share, as the researcher is considered a partial insider with them and bringing her own beliefs to this data (Berger, 2015). Throughout the implementation of the study, the researcher engaged in memoing as a critical reflexive practice. As such, the memos provided an avenue for the researcher to record thoughts during the entire research implementation process. These memos allowed the researcher to reflect and record “coding processes and code choices; how the process of inquiry is taking shape, and the emergent patterns... themes and concepts in the data” (Saldaña, 2016, p. 44). This process

of reflecting and recording increases critical thinking and challenges the assumptions of the researcher (Charmaz, 2014). Figure 5 provides a screen shot of memos from the researcher.

**03/17/2022 - Robin Pre-Test**

These kids were VERY nervous! Their body language was very “twitchy”- knees were bouncing, hands were tapping. I could tell they were intimidated and it felt like they were not confident in themselves. Their voices were super low, which seemed to echo this insecurity. I often found that I could not hear them very well. They also seemed reluctant to share their thoughts. It seemed like they were hesitant to write a lot in fear of me judging their mechanics, writing, etc. We were in the library and there was a bit of background noise, which I am unsure if that made the environment better or worse.

**03/18/2022 - Robin Resource Pre-Test**

The kids did not pay attention AT ALL while I was doing the think aloud “training.” When they talk while they write, they talk quieter. Using the Google Doc word prediction software really helps make their writing more mechanically sound.. Students seem to get ideas from personal experience. Explain more of their thoughts than they write. When they read what they write they say a lot more than what they actually put down. When they tell me why they are choosing the prompt, they go into their reasons and explanations.

**03/21/2022 - Oliva Resource Pre-Test**

During the think aloud training, I felt like my essay was too “elementary” for the students in the room. I felt like I should have adjusted my level of writing, but needed to keep the training the same... which makes me think we should raise the bar for all students, not just SWD. Students in this group also seemed to be concerned with spelling and grammar, similar to the SWD. The first student made connections to writing that she learned - hook, thesis, not saying “I” or “me.” There is a huge difference in the typing ability of the SWD and those without disabilities. Tangents with the personal stories- still explaining more verbally than written text. Constant reviewing and editing- making connections to the prompt, thesis, reasons, explanations, etc.

**Figure 5.**

*Excerpt of Memos Recording the Researchers Personal Reactions*

**Validity**

To support the validity of the conclusions, the researcher engaged in fidelity of implementation practices and inter-rater reliability for the dependent measures.

***Fidelity of Implementation***

The implementation of an intervention is reliant on the interventionist adhering to the components of the intervention. This adherence must be done with high fidelity to

ensure that the intervention is not only delivered as intended, but also delivered with quality (Johnson et al., 2014). All instructional activities were videotaped. To ensure consistency in the delivery of the instructional lessons by the researcher, a fidelity checklist for each lesson was consulted (see Appendices G, J, L–O) through self-report by the researcher. Additionally, another member of the research team who is familiar with the TBGO watched each recorded lesson and documented lesson fidelity.

The researcher developed a fidelity checklist for each instructional lesson (see Appendices G, J, L–O) to determine the procedural fidelity of implementation (FOI) of the study procedures across all conditions. Each checklist includes specific items pertaining to the objective of that particular lesson, such as: (a) ensures the camera is recording, (b) provides instruction on what it means to persuade with root words and examples, (c) provides instruction on what a graphic organizer is with root words and examples, (d) provides an example of a completed TBGO for students to explore, (e) models and highlights all features of the graphic organizer (f) allows students to try various features of the tool with guidance (g) reviews how to locate transition words within the TBGO, (h) provides a review of the technology-based graphic organizer as needed, (i) instructs students to complete the technology-based graphic organizer independently, and (j) turn off camera. When an item was identified it was marked with a *yes* and if an indicator was not identified it was marked with a *no*. The researcher completed the FOI checklist through self-report. The researcher self-reported fidelity of implementation for 100% of the sessions across all conditions. Additionally, a research assistant who was not involved in the data collection, but who was familiar with the

research study, watched the video recordings of 50% of all conditions and assessed FOI. The research assistant then divided the number of indicators that occurred by the number of steps planned. Fidelity of implementation was recorded for 50% of sessions across all conditions.

The researcher recorded 98% fidelity of implementation for proficient writers. This percentage comes from the total number of items possible across all six lessons (52) divided by the number of occurrences (51). The research assistant recorded 94% FOI for proficient writers. This percentage comes from the total number of items possible across all six lessons (52) divided by the number of occurrences (49). The researcher recorded 98% fidelity of implementation for students with high incidence disabilities. This percentage comes from the total number of items possible across all six lessons (52) divided by the number of occurrences (51). The research assistant recorded 96% FOI for proficient writers. This percentage comes from the total number of items possible across all six lessons (52) divided by the number of occurrences (50).

### ***Inter-rater Reliability***

Writing outcomes, including number of ideas generated, number of total written words, and writing quality, were scored independently by two independent scorers. One scorer was a Graduate Research Assistant and the other was the researcher. Scorers were familiar with the research and the rubric, and the researcher trained the Graduate Research Assistant on scoring measures of all three writing outcomes for two, thirty-minute training sessions. The scorers reviewed 30% of paragraphs for students with high-incidence disabilities and for proficient writers across “pretest,” “posttest with the

TBGO,” and “posttests without the TBGO.” Interrater reliability was assessed for 30% of each writing outcome (e.g., number of ideas, total number of written words, writing quality). The total agreement formula was used (smaller number over larger number X 100). For all writing outcomes (e.g., number of ideas generated, total written words, writing quality), scorers met and assessed interrater reliability and discussed disagreements until 100% agreement was reached.

**Pretest.** The initial agreement for the number of words was 100% for students with high-incidence disabilities and 100% for proficient writers for the “pretest.” The initial agreement for the number of ideas generated was 100% for students with high-incidence disabilities and was 75% for proficient writers. The initial agreement for writing quality was 25% for students with high-incidence disabilities and 25% for proficient writers. The initial agreement for the total number of written words was 100% for students with high-incidence disabilities and 100% for proficient writers.

**Posttest with TBGO.** The initial agreement for the number of words was 100% for students with high-incidence disabilities and 100% for proficient writers for the “posttest with TBGO.” The initial agreement for the number of ideas generated was 60% for students with high-incidence disabilities and 100% for proficient writers. The initial agreement for writing quality for students with high-incidence disabilities was 40% and 25% for proficient writers. The initial agreement for the total number of written words was 100% for students with high-incidence disabilities and 100% for proficient writers.

**Posttest without TBGO.** The initial agreement for the number of words was 100% for students with high-incidence disabilities and 100% for proficient writers for the

“posttest without TBGO.” The initial agreement for the number of ideas generated was 75% for students with high-incidence disabilities and 100% for proficient writers. The initial agreement for writing quality for students with high-incidence disabilities was 75% and 75% for proficient writers. The initial agreement for the total number of written words was 100% for students with high-incidence disabilities and 100% for proficient writers.

### **Mixed Analysis**

The data analysis for the qualitative data and the quantitative data provides a framework for generating meta-inferences (i.e., conclusions yielded from inferences gleaned from both qualitative and quantitative results) using mixed analysis.

Onwuegbuzie and Teddlie (2003) conceptualized that when analyzing quantitative and qualitative data within a mixed methods framework, researchers can undergo several stages, including (a) data reduction (i.e., reducing the scope of the qualitative data and quantitative data), (b) data display (i.e., describing pictorially the qualitative data and quantitative data), and (c) data comparison (i.e., comparing qualitative and quantitative data). Creamer (2017) also included *cross-case comparison* as a mixed method analytic strategy in which qualitative and quantitative data are consolidated into holistic profiles for the purposes of comparison.

Given the purpose of the study and the nature of the research question, the mixed analysis techniques included: (a) data reduction (i.e., reducing the depth of data through coding for thematic analysis and descriptive and nonparametric statistics), (b) data display (i.e., visual representations of data through charts and tables), (c) data comparison

(i.e., comparing data from qualitative and quantitative data sources), and (d) cross-case comparisons (i.e., comparing the qualitative and quantitative data sources across cases; Migiro & Magangi, 2011). However, because the use of a mixed methods analysis can be emergent, additional data analysis techniques may surface as the data emerges. Data from both the qualitative and the quantitative data were purposefully reduced, to maintain their integrity, in a graphical display. This visual summary facilitates and maximizes the transmission of findings (Dickenson, 2010). As such, this method of communicating results “integrates the data by bringing the data together through a visual means to draw out new insights beyond the information gained from the separate quantitative and qualitative results” (Fretters et al., 2003, p. 2,143). As such, the graphical display allows for the examination of patterns between the findings across Case 1 and Case 2 and across the writing contexts (“pretest,” “posttest with the TBGO,” “posttest without the TBGO”). It is noteworthy to view the thought processes of students in Case 1 and Case 2 across “pretest,” “posttest with the TBGO,” and “posttest without the TBGO” while simultaneously viewing the quantitized data.

The results of the aforementioned analyses were used to draw conclusions and to generate inferences through the use of a meta-inference as a final synthesis of the study. A meta-inference is a conclusion generated by linking inferences from the qualitative and quantitative strands for a mixed methods study (Tashakkori & Teddlie, 2008). Such meta-inferences were delivered with methodological transparency by describing and explaining how and why the qualitative analysis and the quantitative analysis are linked.

## Summary

An exploratory mixed methods study for investigating the phenomenon of idea generation among middle school students with high-incidence disabilities and those who are proficient writers is both logical and practical given the use of induction, deduction, and abduction (uncovering and relying on the best of a set of explanations for understanding the given results; Johnson & Onwuegbuzie, 2004). Students in the study engaged in a writing environment using a technology-based graphic organizer (TBGO). Think alouds were employed as a medium for exploring the phenomenon of idea generation for persuasive writing while simultaneously producing written compositions. As such, data for both the qualitative and quantitative strands of the study were collected concurrently. Data were analyzed using thematic analysis of open codes (qualitative) and descriptive and non-parametric statistics (quantitative). The results of each strand (i.e., qualitative, quantitative) are enhanced by the other to generate meta-inferences. Measures of trustworthiness, such as purposeful sampling, peer debriefing, and critical reflexivity, and validity measures, such as fidelity of implementation and inter-rater reliability were employed as a mechanism for legitimation of the study.

Without the mixing of different data sources, it is plausible that an impoverished understanding of the unique and seemingly nuanced phenomenon of idea generation across students with high-incidence disabilities and skilled writers would have surfaced. Therefore, the use of meta-inferences from the connections between the qualitative and quantitative components appear to yield the greatest possibility for gaining a rich

understanding of the phenomenon under investigation. A summary table compiling research questions, data sources, and data analyses is provided in Table 6.

**Table 6**

*Summary of Research Questions, Data Sources, and Data Analysis*

Research Question	Data Sources	Data Analysis
1. How do middle school students with high-incidence disabilities and proficient writers generate ideas when given a persuasive writing prompt?	Qual: think aloud (within and across cases)	Qual: thematic analysis
2. To what extent does the use of the TBGO change the idea generation processes for middle school students with high-incidence disabilities and proficient when given a persuasive writing prompt?	Qual: think aloud (within and across cases)	Qual: thematic analysis
3. To what extent do middle school students with high-incidence disabilities differ in the number of ideas generated, the total number of written words, and writing quality when given a persuasive writing prompt when writing with and without the TBGO?	Quant: researcher generated rubric assessing the number of ideas generated (writing outcomes from pretest, posttest w/TBGO, posttest without TBGO)	Quant: Wilcox signed-rank)
4. To what extent do middle school proficient writers differ in the number of ideas generated, the total number of written words, and writing quality when given a persuasive writing prompt when writing with and without the TBGO?	Quant: researcher generated rubric assessing the number of ideas generated (writing outcomes from pretest, posttest w/TBGO, posttest without TBGO)	Quant: Wilcox signed-rank)
5. To what extent do middle school students with high-incidence disabilities and proficient writers differ in their idea generation processes in relation to the number of ideas generated when given a persuasive writing prompt when writing with and without the TBGO?	Qual: think aloud (within and across cases) Quant: validated writing quality rubric (writing outcomes from pretest, posttest w/TBGO, posttest without TBGO)	Mixed Analysis (Graphical Display)

## Chapter Four

The purpose of this exploratory mixed method study was to compare the idea generation processes and writing outcomes produced through the think alouds of eighth grade students, specifically those with high-incidence disabilities and those who were identified as proficient writers. The research questions presented in Chapters 1 and 3 were investigated in two ways: (a) qualitatively, using think alouds; and (b) quantitatively, by measuring writing outcomes, including total number of ideas, total written words, and writing quality. This chapter presents the findings of the qualitative and quantitative research questions that guided this study. Additionally, a mixed analysis will be presented. This chapter will conclude with a summary of the findings.

### Qualitative Think Alouds

The qualitative component of this mixed methods study was guided through a think aloud protocol that asked students how they generated the ideas when given an opinion-based persuasive writing prompt. Using these responses, thematic analysis (Attride-Stirling, 2001) was used to investigate the first research question: *How do middle school students with high-incidence disabilities and proficient writers generate ideas when given a persuasive writing prompt?*

### ***Idea Generation at “Pretest”***

In this study, students with high-incidence disabilities (n = 8) and proficient writers (n = 11) generated ideas when responding to a choice of prompts. The two prompt choices were: (a) *Some believe 10-year-old kids should be able to stay home by themselves. Using specific details and examples to support your position, argue whether or not 10-year-old kids should be able to stay home by themselves* and (b) *Some people believe in separate schools for boys and girls. Argue whether there should be separate schools for boys and girls and write an essay supporting your opinion.* Two themes emerged that characterize the ways students with high-incidence disabilities generated ideas at “pretest”: (a) referencing personal experiences and (b) referring to the prompt. An additional theme generated for students with high-incidence disabilities during the think aloud was exhibiting idleness. A total of three themes also emerged at “pretest” that characterize the ways proficient writers generate ideas: (a) referencing personal experiences, (b) employing strategy use, and (c) considering the perspectives of others. Proficient writers also engaged in multiple idea generation processes during “pretest.” While students with high-incidence disabilities and proficient writers both generated ideas by referencing personal experiences, they also differed in the other ways in which they generated ideas during “pretest,” which will be discussed.

**Similarities in Idea Generation Processes at “Pretest.”** Students with high-incidence disabilities and proficient writers both generated ideas for an opinion-based persuasive writing prompt through personal experiences. Both groups of students shared

personal experiences, ways of thinking, and unique exposures as an instrument for generating ideas, which will be subsequently described.

*Referencing Personal Experiences.* The *referencing personal experience's* theme encompasses ideas generated based on students' personal experiences. This includes events, memories, background knowledge, and past conversations. Students described a direct encounter with the prompts or were able to imagine themselves in that situation.

A female student with high-incidence disabilities referenced a personal experience during her think aloud procedure. This direct experience inspired her ideas centered around the prompt for why she thought 10-year-olds should not be able to stay home by themselves. While this student articulated that she was able to generate her ideas based on personal experience, she did not express this in writing directly. Rather, she verbally recalled a specific conversation with her mother regarding staying home alone:

Well, my mom, she is really strict, and she tells me all this. I am like no, I want to stay home by myself and she's like no you're not. You're coming with me. You know like I am honestly sometimes glad I had a strict mother because if I didn't, I could've been really spoiled.

While only one student with high-incidence disabilities generated ideas by referencing a personal experience, most proficient writers generated ideas based on personal experiences. In response to one of the "pretests" prompt choices focusing on asserting an opinion on whether or not girls and boys should be in separate schools, Becky reminisced on a personal experience from she was younger, stating:

I was always focused on this kind of mindset and then I – I tended to only have guy friends. I didn't have girlfriends and especially in elementary school and so by having the way that they think around me caused me to change the way I think somehow and helped me to become more well-rounded.

Becky generated ideas for her essay, including improved social skills and exposure to different viewpoints, that were garnered through her personal experience in elementary school.

In addition, Stella, another proficient writer, expressed that she generated ideas from personal experiences related to background knowledge, including things she had been exposed to, like what she had read or watched. For example, when asked how she generated ideas for her essay, she noted:

Um, I try to pull from things I've seen like online, but most of the time when I write something, it's based on either memory or something I've read or watched or something that I already know of. I don't really try to pull from random examples.

Proficient writers explicitly noted that they generated ideas from personal experiences. For example, Natalie stated that she generated ideas from, "Um, probably from experience because I was left home alone when I was younger too." Similarly, Leah mentioned, "I am saying from personal experiences. So yeah, that's what I got most of it from– from personal experiences of growing up sometimes in a house alone." Kylie, also identified as a proficient writer, expressed that her ideas came from, "Um I am just

thinking of in like my life.” She went on to further describe a situation when she and another female classmate were talking to a teacher – they were both agreeing and saying the same thing, but then “a guy sitting next to me and like he says something and then I am like I’ll add on because we both aren’t really thinking the same thing because like we don’t.” In this way, Kylie drew on a personal experience that helped shape her ideas and reasons for her response to the prompt.

Another proficient writer, Joseph, also considered ideas “from my [his] own experiences.” For example, he referenced his memories of staying home alone with older siblings who “are way more logical” and “playing games,” so he “never really moved, so there was nothing I really did so it kind of kept me entertained for the most part” as justification or ideas for why he thought 10-year-olds should be able to stay home by themselves.

Graham and Soraya evoked ideas based on personal experiences that helped to form their essay responses. In an effort to compose a persuasive essay surrounding whether or not 10-year-old kids should be left alone, Graham reminisced:

Yeah – probably from like personal experience. I have two little brothers and they could go crazy if no one is watching them. My dad has gone out before with my stepmom and it’s really not good. They go crazy. It’s just like a mess.

Soraya was also reminded of a personal experience when she was left alone in a car while she was younger to propel her opinion that 10-year-old kids should not stay home by themselves. She stated, “So, now I am going to give my example, maybe from

something from my personal life. So, I am going to start with a story about – it was the first thing that came to my head.” Soraya also reminisced on a personal experience and remembered, “I was not that mature when I was 10 yet and I really didn’t know how to do things by myself, and I needed help in a lot of things.”

### **Unique Idea Generation Processes for High-Incidence Disabilities at**

**“Pretest.”** Students with high-incidence disabilities, however, differed from proficient writers in their idea generation processes, as they also generated ideas by (a) referring to the prompt. Additionally, another theme *exhibiting idleness* emerged for this group of students with high-incidence disabilities (see Table 7). This section will discuss these two unique themes that emerged for students with high-incidence disabilities during pretest.

***Referring to the Prompt.*** Some students with high-incidence disabilities referred to answering the prompt as a mechanism for generating ideas (see Table 7). For referential responses, students referenced key words or ideas from the writing prompt. For example, when Brandon was asked how he came up with ideas, he stated, “Cause well, 10-year-old kids, they can go to school already and they – instead of not going to school and paying babysitters and they can just go to school and learn.” This appeared to be his response to the prompt, “Some believe 10-year-old kids should be able to stay home by themselves. Using specific details and examples to support your position, argue whether or not 10-year-old kids should be able to stay home by themselves,” rather than an explanation for how he generated ideas. In essence, the reference to the prompt appeared merely as a mechanism for asserting an opinion, rather than probing his memory for ideas. Similarly, when Zack was asked how he came up with ideas, he also

referenced keywords from the prompt, stating, “Ten is still pretty young so they can [stay home].”

***Exhibiting Idleness.*** For exhibiting idleness, it was unclear to both the student and the researcher either what inspired the response or if the student just mentally did not have any ideas. When students exhibited idleness also encompassed students who evoked relatively inactive responses during the think aloud protocol. Exhibiting idleness responses were spontaneously generated by the participant, who was unable to explain where the idea came from. They did not refer to personal experiences or the prompt, but rather stated that the ideas were just “thought about.” Most students with high-incidence disabilities expressed that ideas were primarily generated from what was “in their head” (see Table 7). For example, when given a “pretest” and asked how he came up with the ideas that he wrote about, Tony explained, “I guess I thought about it in my head” and “I just thought about it.” When Ellie was asked how she came up with her ideas during the “pretest,” she responded similarly by saying, “Um, I just thought about it.” Comparatively, during the same one-on-one “pretest,” when asked how Juliet came up with her ideas to write about, she commented, “Because I don’t know.” Similarly, two students, Noah and Drew, did not respond to the protocol prompting them to express how they came up with their ideas. Drew expressed, “That’s pretty much all I have to say.” In addition, Noah stated, “I really don’t know what to say. I just basically have like no answer.” Most of the students with high-incidence disabilities attributed the ideas they generated to what was “in their head” or without *knowing*. Importantly, it is possible that students who responded “in my head” were thinking of past experiences or the prompt

but did not have the metacognitive or linguistic ability to articulate their thoughts. This key finding will be discussed in Chapter 5.

In conclusion, two unique themes emerged for writers with high-incidence disabilities during “pretest.” These were referring to the prompt and exhibiting idleness. The next section will address differences in idea generation for proficient writers at pretest and compare the strategies used by proficient and high-incidence disabilities students.

### **Unique Idea Generation Processes for Proficient Writers at “Pretest.”**

Proficient writers engaged in three idea generation processes during pretest. Both proficient writers and students with high-incidence disabilities generated ideas from personal experiences during pretest. However, proficient writers also generated ideas by employing strategy use and considering the perspectives of others, which differed from the idea generation processes of students with high-incidence disabilities. Additionally, proficient writers engaged in multiple idea generation processes, as compared to one-dimensional processes for generating ideas. This section will discuss the (a) employing strategy use and (b) considering the perspectives of others themes unique to proficient writers.

*Employing Strategy Use.* The theme of employing strategy use refers to a brainstorming strategy that the students designed or had been taught in school. This can include referring to the prompt or a writing or idea-generating strategy. While students with high-incidence disabilities would merely refer to the prompt when asked about ideas, proficient writers were observed explicitly and intentionally using the prompt as a

strategy for igniting ideas (see Table 7). For example, one student, Stella, referred to the prompt several times and stated, “Okay, sorry, I am trying to reread the prompt to get ideas.” Soraya also engaged in this strategy, as she noted, “I am going back and rereading.” Additionally, this strategic action sparked revisions in Soraya’s essay, as she stated, “So, my second support for the thesis statement was because they might not know how best to take care of themselves. So, now that I’m looking back at this, I feel like it sort of fits with my first support, so I might have to change that.” This differed from students with how students with high-incidence disabilities used the prompt. Students with high-incidence disabilities did not use the prompt to spark an idea, but rather, repeated the words from the prompt with only the inclusion of their opinion.

Proficient writers also recalled strategies that they were previously taught for generating ideas. For example, Graham reminisced about a strategy that he was taught in fifth grade. He mentioned:

I had a fifth grade teacher that gave us like a sheet of paper before we would like take something so like a brain dump if you have heard of that before and she would be like, “write everything down that you know before you take the test but you can’t look at your notes” so it’s like cheating but it’s not because you are writing everything that you know on paper and then you’re using that to take the test to get a good grade. So, I just kind of do that, but in my head. So, like all of my thoughts – I just like- it’s kind of hard to explain.

Although Graham mentioned this strategy of a “brain dump,” he was not observed engaging in this strategy, but rather merely mentioned it as a strategy he uses when generating ideas. As such, there was no evidence that Graham had used this “brain dump” as a brainstorming strategy for generating ideas. However, it is possible he did a mental “brain dump” of ideas without writing them down.

One student remarked on an organizational strategy for writing that helped her to generate and organize her ideas. Kylie reproduced an organizational strategy that she learned previously for structuring an argumentative or persuasive essay. She said, “when we do like the [state assessment] we have to have this like four-square thing where we organize our paragraphs.” It is evident that proficient writers engage in variety of strategic actions as they compose opinion-based persuasive essays.

*Considering the Perspectives of Others.* Whereas students with high-incidence disabilities primarily exhibited idleness during the think aloud protocol, proficient writers contrasted by generating ideas that considered the perspectives of others or potential “characters” within their persuasive arguments. Proficient writers generated ideas through empathy or from perspective-taking (see Table 7). These students could imagine or reminisce on the point of view of people in their lives. For example, Becky had considered personal characteristics of her parents and how that could enhance her ability to persuade readers that there should not be separate schools for boys and girls. Becky described:

I know that certain assets prove useful, so like being able to talk to people and being able to understand their opinions helps with all kinds of jobs

like she [mom] being an accountant, she's doing that math and she is doing all that, but at the same time, if she wasn't able to work with people then she wouldn't be able to do that because it's the other peoples' taxes she is doing.

This is not her personal experience; rather, she is empathizing with her mom's personal experiences. She recognized that her mom's experiences working with many different people provided her with an opportunity to understand different perspectives, which could be similar to being in a school environment with both boys and girls.

Julie also drew on a more empathetic ideology as she generated ideas for the prompt surrounding separate schools for boys and girls. She noted:

I guess so like they could form like better relationships and ... it's just kind of essential to the world... It would be more like unfamiliar in like forming those relationships and I guess it just like- it would just be like more awkward.

She went on to explain that if boys and girls never interacted then it would "just be harder." In this example, Julie does not consider an immediate "character" to empathize with, but rather considers a broader or more worldly empathetic perspective. These broader considerations were also revealed in Leah's think aloud, as she discussed reasons for why she thought 10-year-olds should not stay home by themselves. She argued:

If your child is clingy though, it might not be the best idea... Also, your neighborhood ... can come into play if you had like a bad neighborhood

where there are shootings every single day, then yeah, you don't want to leave them alone.

Furthermore, in an effort to generate ideas to formulate a strong persuasive argument, Stella pondered things she had heard from friends. Again, she referenced the experiences of others alongside her own experiences with a younger brother regarding why she thought 10-year-olds should not be able to stay home. She commented:

I am trying to think of like things he [my brother] has done to prove my point that like so I can draw from examples or things that I have heard from my friends about their little brothers or sisters or something that like they've done.

These two examples illustrate how Stella empathizes with the experiences of others to develop her ideas.

**Multiple Processes.** During “pretest,” idea generation processes fell into three categories: (a) referencing personal experiences, (b) employing strategy use, and (c) considering the perspectives of others. However, most proficient writers engaged in multiple idea generation processes. For example, one student, Kylie, generated ideas by referencing personal experiences, employing strategy use, and considering the perspectives of others. Another student, Graham, generated ideas by referencing personal experiences and employing strategy use. This illustrates that even without writing scaffolds and supports, proficient writers independently engage in multiple idea generation processes when responding to an opinion-based persuasive writing prompt. Table 7 demonstrates a comparative illustration of exemplar quotes from the think aloud

protocol at “pretest” for each theme for students with high-incidence disabilities ( $n = 8$ ) and proficient writers ( $n = 11$ ).

**Table 7**

*Idea Generation Themes At “Pretest”*

Students with High-Incidence Disabilities	Proficient Writers
Examples From Each Theme	
<p>“Well, my mom, she is really strict, and she tells me all this. I am like, ‘no, I want to stay home by myself.’ And she’s like, ‘no, you’re not. You’re coming with me.’ You know like I am honestly sometimes like glad I had a strict mother because if I didn’t, I could’ve been really spoiled.</p> <p>Joy</p>	<p>Referencing Personal Experiences</p>
<p>“Cause well, 10-year-old kids, they can go to school already and they- instead of not going to school and paying babysitters and they can just go to school and learn.”</p> <p>Brandon</p>	<p>Referring to the Prompt</p>
<p>“I guess I just thought about it in my head.”</p> <p>Tony</p>	<p>Exhibiting Idleness</p>
<p>“It’s just kind of like what I use, like because I have a neighbor that’s like my friend Eli, he goes here, and he lives like two doors down so when I stay home by myself, I just like play outside with him.”</p> <p>Aidan</p>	

Employing  
Strategy Use

“I had a fifth grade teacher that gave us like a sheet of paper before we would like take something so like a brain dump if you have heard of that before and she would be like, “write everything down that you know before you take the test but you can’t look at your notes” so it’s like cheating but it’s not because you are writing everything that you know on paper and then you’re using that to take the test to get a good grade. So, I just kind of do that, but in my head. So, like all of my thoughts- I just like- it’s kind of hard to explain.”  
Graham

Considering  
the  
Perspectives  
of Others

“I am trying to think of like things he [my brother] has done to prove my point that like so I can draw from examples or things that I have heard from my friends about their little brothers or sisters or something that like they’ve done.”  
Stella

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In conclusion, proficient writers utilized two unique strategies for generating ideas during “pretest” (a) employing strategy use and (b) considering the perspectives of others. Proficient writers also generated ideas using multiple idea generation processes. The next section will address idea generation processes for students with high-incidence disabilities and proficient writers during “posttest with the TBGO” comparatively.

### ***Idea Generation at “Posttest With the TBGO”***

Thematic analysis was used to answer the second research question: *To what extent does the use of the TBGO change the idea generation processes for middle school students with high-incidence disabilities and proficient writers when given a persuasive writing prompt?* The findings from the second research question were also disaggregated

for students with high-incidence disabilities and proficient writers. Themes were gleaned based on the data from the think aloud protocols that occurred during the “posttest with the TBGO.” These think aloud procedures occurred after the five instructional lessons and a minimum of four independent writing sessions (see Procedures; Chapter 3) centered on constructing a persuasive essay with the use of the TBGO. As such, the emergent themes for students with high-incidence disabilities were (a) referencing personal experiences, (b) considering the perspectives of others, and (c) exhibiting idleness. As a result, the use of persuasive writing instruction and orientation and use of the TBGO offered students with high-incidence disabilities a new mechanism for generating ideas (considering the perspectives of others), while they maintained their original or “pretest” idea generation themes (referencing personal experiences and exhibiting idleness). Additionally, one student, Ellie, engaged in all three of these processes for generating ideas.

The use of thematic analysis revealed that after instruction on persuasive writing and orientation and use of the TBGO for writing persuasive essays, proficient writers generated ideas by (a) referencing personal experiences, (b) considering the perspectives of others, (c) using organizational supports, and (d) pausing to think. Consequently, persuasive writing instruction and the orientation to and the use of the TBGO offered proficient writers a new procedure for generating ideas (pausing to think), while they maintained their original or “pretest” idea generation processes (referencing personal experiences and considering the perspectives of others). Furthermore, the *employing strategy use* idea generation process shifted to a more organizationally centered idea

generation process. Additionally, a substantial number of proficient writers engaged in multiple processes for generating ideas.

In sum, at “posttest with the TBGO” students with high-incidence disabilities and proficient writers engaged in similar idea generation processes when using the TBGO (referencing personal experiences and considering the perspectives of others). Students with high-incidence disabilities and proficient writers also differed in their idea generation processes when using the TBGO. For example, while these students with high-incidence disabilities exhibited idleness during the think aloud, proficient writers differed by generating ideas using organizational structures and by pausing to think. In addition, the use of the TBGO propelled both students with high-incidence disabilities and proficient writers to engage in multiple idea generation processes. Table 8 demonstrates a comparative illustration of exemplar quotes from the think aloud protocol at “posttest with the TBGO” for each theme for students with high-incidence disabilities (n = 8) and proficient writers (n = 11).

The two prompt choices during “posttest with the TBGO” were as follows (a) *Some students go to school on Saturday. Write an essay on whether or not students should go to school on Saturdays* and (b) *Recess can be good for kids. Using specific details and examples to persuade someone of your opinion, argue whether or not kids should get more recess time.*

**Similarities in Idea Generation Processes at “Posttest With the TBGO.”** This section will first introduce how students with high-incidence disabilities and proficient writers were similar in their idea generation processes while using the TBGO, through the

themes of referencing personal experiences and considering the perspectives of others. Then, the differences between the two groups in idea generation processes will be discussed. Students with high-incidence disabilities and proficient writers generated ideas when responding to a choice of prompts during “posttest with the TBGO.”

***Referencing Personal Experiences.*** When responding to opinion-based persuasive writing prompts with the TBGO, half of the students with high-incidence disabilities (see Table 8) generated ideas based on personal experiences. While this theme was present during “pretest,” this was a significant increase from pretest. Similarly, when responding to opinion-based persuasive writing prompts, several proficient writers (see Table 8) generated ideas based on personal experiences.

Students with high-incidence disabilities generated ideas from personal experiences, such as memories, events, and background knowledge. For example, when responding to the prompt pertaining to students going to school on Saturday, Tony expressed, “I just thought about [me] being in school.” Similarly, Drew expressed his personal opinion on how he would feel going to school on Saturday. For example, he asserted, “I would hate to have to go to school on Saturday.” He went on to repeat this sentiment later in his essay, by stating, “I think that would be a nightmare to go to school on Saturday.” Equivalently, Ellie expressed her personal feelings on the matter to generate an idea by saying, “Because I usually think about if I ever have to do work on the weekends. It’s not very fun.” Lastly, Joy considered how she would personally feel if she did not have recess or a break throughout the school day. She noted, “If I was working since eight in the morning and to 4pm, it would be stressful and hard to focus.”

Proficient writers generated ideas during the “pretest” and “posttest with the TBGO” by drawing on personal experiences. Aidan described a personal experience to explain why he thought students should not go to school on Saturdays by stating, “Like for me, on Saturday I have a flag football and lacrosse games, but on Sunday I have two football games, so if it was all on Sunday, it would be a lot in one day.” He echoed this insight when he was asked how he came up with his ideas, by stating, “from like personal experience.” Additionally, Graham reminisced how his weekends are spent with family and how having school on Saturday “Takes time off from them seeing their family and spending time with their friends outside of school.” Natalie had similar insights and when asked how she generated ideas for her essay, she simply stated, “Um, I guess that’s how I feel I guess.”

Stella contemplated how the prompt (e.g., going to school on Saturday) would impact her own life. She said, “I am trying to think of something that I do on Saturday that like betters me. Like oh, it gives me time to study!” Soraya also noted how having school on Saturday might impact her own life. She noted, “So, I am going to touch up on that too because I understand it better since I am a person like that who needs Saturday to themself. So, I am going to explain why and say more.”

Becky chose to respond to a different prompt (e.g., kids getting more recess time), however, she also drew on personal experiences to generate ideas for her essay. For example, she shared a personal story about “when students go to lunch, they may choose not to eat so that they can have free time and when we return, they are more focused and

less drowsy.” Becky shared more than one personal account that added to her constellation of ideas. For example, she stated:

I know for a fact that last year when we were doing distance learning and staring at the screen, I would take like a 30 minute lunch or they would just give us free time and I would come back and be like that is such an obvious problem now I want to be able to go back and fix it and be more efficient since I am not staring at the same problem over and over again.

These examples illustrate the ways in which students with high-incidence disabilities and proficient writers used a personal idea generation process.

*Considering the Perspectives of Others.* When students with high-incidence disabilities used the TBGO during “posttest,” they used a new idea generation process – considering the perspectives of others. When using the *considering the perspectives of others* idea generation process, writers imagined themselves in a new situation or considered the point of view of others. In fact, after using the TBGO, most students with high-incidence disabilities generated ideas by considering the perspectives of others or through empathy (see Table 8). This was an idea generation process that was not present during “pretest” for students with high-incidence disabilities yet was present for proficient writers.

Tony, a student with a high-incidence disability, considered what it might be like for students if they went to school on Saturday. He noted, “because it’s like the two days they have a break from school... and they wouldn’t like get a break.” Brandon also considered that students might need a break from school, stating, “well, students need a

break from school... they need to spend time with their family at least two days and have fun.” Brandon added to his empathetic sentiments by saying, “every day you have to wake up early to go to school and they don’t get that much sleep... because they could wake up at like 10 and 11 and get more sleep.” Furthermore, although Zack did not elaborate much on his idea, he garnered an idea based on the consideration of other students. For example, he said, “I am trying to say school on Saturday is not good for kids.”

Empathetic themes continued for students with high-incidence disabilities as they used the TBGO. Ellie noted, “having to do schoolwork would probably mess up their little routines” and “some people might need a break to study tests.” Juliet also echoed how school on Saturday might impact others by stating, “a lot of people like spending time with their families.”

Most proficient writers (see Table 8) generated ideas while using the TBGO through empathy or through the consideration of the experiences of others. This theme also surfaced during “pretest” for proficient writers. In addition to providing personal accounts for generating ideas, Becky also generated ideas by considering the personal experiences of a friend. She stated:

She would come out to lunch/recess, and she would be super-duper stressed, and we would just fool around, and she would be in a much better mood by the time she went back. Sometimes it [recess] just allows kids to just be kids and not worry about all bigger life problems.

Similarly, when Juliana was asked how she came up with ideas, she asserted:

Um, I thought of them because or I thought of them how I would think if I was a teacher. Like I wouldn't want a student being at school for the whole day. I think they really should only come to school if they needed help with something.

When generating ideas, Joseph considered multiple perspectives, such as the perspectives of teachers, students, and school staff. For example, when considering the experiences of students, Joseph said, "I wanted to put something that students would relate to." Joseph examined the perspective of a teacher by saying, "My second reason. Working on a Saturday is awkward. Who works on a Saturday? Actually no, I am changing it, I am changing it- easier for teachers. Second, on the other side, teachers need breaks too. Everyone's human." Lastly, Joseph pondered the perspective of other school staff, including those who repair the school building. For instance, he expressed, "It's better for staff because there is other people other than teachers. "Likewise, it makes it easier for staff to fix... To fix, clean, repair, etc."

As Julie was constructing her essay, she generated ideas based on what other students or the reader might relate to. For example, when considering her topic sentence or hook, she stated, "I wanted to start with like I guess students might relate to, so I put, 'wahoo, it's Friday, but it's not the weekend yet!'" Additionally, Julie revisited this strategy for generating ideas when constructing her summary. For instance, she said:

And to like to rephrase my thesis and I also wrote all these things benefit the students which can show in their grades. And like that last sentence I put that because if it's like an adult reading this they might just be like oh

it's just a kid that doesn't want to go to school on Saturday, but it would also benefit their grades, which is good for the adults too.

When considering the prompt, "Recess can be good for kids..." Kylie's ideas were provoked by considering the viewpoint of children. She noted, "when kids are learning for seven hours straight, they need to have a break to let all their energy out so they can focus again."

Leah's ideas for her essay expressed empathy for others, as she states:

My third reason, it would be - and lastly, most people have church on Sundays. But there are certain religions that have church on Saturday and also there are certain ones that celebrate different events on those days. This could affect a lot with their absence and the days they missed along with the knowledge they missed.

As such, Leah considered religious factors, along with other weekend events that might prevent students from going to school on Saturday. Soraya also constructed ideas for her essay based on religious facts. She noted that schools have off on Saturday because that's "when Christians go to church." She empathized with Christian students as she considered having a school day on her day of worship, Jumma. She stated:

I just thought about what if I was a different student. Like, right now I am looking at what I do as a Muslim. So then at first, I decided to think of the reasoning behind weekends, which I know is because Christians have to go to church on Sundays and so they gave Saturday and Sundays off to give time to prepare for Sundays. And that just also reminded me of like,

well, I guess I didn't share this, the fact that I'm Pakistan and other Muslim countries they don't have Sundays off. They have Fridays off. You have Friday off for Jumma.

Soraya not only considered the perspectives of other students when generating ideas for responding to the essay prompt, but she also considered the viewpoint of teachers. For example, she verbalized, "I also touched up previously that having Saturday off would give students and the teachers time too because I was realizing that I have been talking about students a lot, but honestly having Saturday off will also affect the teacher." In summary, these are examples of how students with high-incidence disabilities and proficient writers applied an empathetic idea generation process during "posttest with the TBGO."

***Multiple Processes.*** Themes emerged related to how this group of students generated ideas when given an opinion-based writing prompt as students with high-incidence disabilities were engaging in think aloud protocols at the "posttest with the TBGO." When using the TBGO, themes gleaned from the think aloud protocol fell into three categories: (a) exhibiting idleness, (b) referencing personal experiences, or (c) considering the perspectives of others. However, some students with high-incidence disabilities engaged in multiple idea generation processes. For example, one student, Ellie, engaged in idea generation processes of referencing personal experiences and considering the perspectives of others. Ellie also exhibited idleness during her think aloud protocol. Similarly, Zack engaged in the idea generation process of considering the perspectives of others while also exhibiting idleness. Tony also engaged in two idea

generation processes, including referencing personal experiences and considering the perspectives of others. This contrasted with the one-dimensional process of generating ideas that students with high-incidence disabilities engaged in during “pretest” before explicit instruction on the genre of persuasive writing and orientation and use of the TBGO.

As proficient writers were engaging in think aloud protocols, themes emerged related to how this group of students generated ideas when given an opinion-based persuasive writing prompt. When using the TBGO, idea generation processes fell into four categories: (a) referencing personal experiences, (b) considering the perspectives of others, (c) using organizational supports, and (d) pausing to think. However, most of proficient writers engaged in multiple idea generation processes. For example, one student, Stella, generated ideas referencing personal experiences, considering the perspectives of others, spontaneously, and using organizational supports. Another student, Leah, generated ideas considering the perspectives of others and pausing to think. Both groups (students with high-incidence disabilities and proficient writers) engaged in multiple idea generation processes during “posttest with the TBGO.” However, while a small number of students with high-incidence disabilities engaged in multiple idea generation processes, most proficient writers engaged in multiple idea generation processes.

**Unique Idea Generation Processes for High-Incidence Disabilities at “Posttest With TBGO.”** At the “posttest with the TBGO,” students with high-incidence disabilities and proficient writers engaged in similar idea generation processes, including,

(a) referencing personal experiences, (b) considering the perspectives of others, and (c) multiple processes. However, there were still thematic differences between the groups. This section will first address strategies used only by students with high-incidence disabilities, and later, idea generation processes applied only by proficient writers. Students with high-incidence disabilities continued to lack awareness for generating ideas during posttest with the TBGO – a theme that also emerged during pretest.

*Exhibiting Idleness.* The students with high-incidence disabilities still attributed the ideas they generated to what “just comes to their head.” This theme was also apparent during “pretest” for students with high-incidence disabilities (see Table 8). For example, when asked how he came up with his ideas, Zack stated, “It just comes to my head.” Noah and Ellie offered similar responses by stating, “I have no idea how I am getting them” and “I don't know. I just think about it,” respectively.

**Unique Idea Generation Processes for Proficient Writers at “Posttest With TBGO.”** Proficient writers engaged in four idea generation processes during “posttest with the TBGO.” Proficient writers and students with high-incidence disabilities both generated ideas from personal experiences and through empathy during the posttest without the TBGO. However, proficient writers generated ideas using organizational supports and pausing to think, which differed from the idea generation processes of students with high-incidence disabilities during “posttest with the TBGO.” These were also new themes compared to the “pretest” idea generation processes of proficient writers.

*Using Organizational Supports.* A few proficient writers spawned ideas through the consideration of the organizational parameters of the genre, through those imposed due to the structural nature of the TBGO (e.g., Determine Three Reasons), or based on what students had recalled being taught during instructional lessons (see Table 8). This was a new theme that emerged after persuasive writing instruction and orientation and use of the TBGO. During Stella’s think aloud, she reflected on the parameters within the persuasive genre that she learned from her Language Arts teacher and from those found within the TBGO to construct ideas. For example, she asserted, “Identify my opinion. Um, I need a hook first because that’s just what I am supposed to do. Usually, I ask a question... so I will try to think of a relevant question.” Later in the essay, Stella stressed the organizational parameters of the genre that she learned by saying, “I am going to write my explanations later. Like after I determine first, second, and third reason, because I have to put that in because they always tell me to.”

As Joseph was composing his essay, he often referenced the organizational parameters built into the TBGO for the number of ideas “needed,” such as including three reasons. For example, he made assertions such as, “now I just need to think of my three reasons... Now I am going to my first reason... My third reason will be enjoy activities besides school.”

Since the TBGO is structured in a way that encourages students to generate three reasons, Julie built her essay on those guidelines. As such, she said, “and now I just need to think of my three reasons.” Soraya paralleled these sentiments, as she said, “Okay, so now I need three reasons, so I usually do two, but I am just going to do three.” Later, as

she was continuing to construct her essay, she paused when she got to the part in the TBGO that prompts students to “Determine 3rd Reason” and stated, “So, now I can think of my third reason.” These examples highlight the ways in which proficient writers utilized the TBGO’s organizational structure to generate ideas.

*Pausing to Think.* The use of the TBGO provided students with a new idea generation process that was not evident during the “pretest.” Several students (see Table 8) cited that they either spontaneously thought of ideas or paused to think of ideas. This idea generation process differed from students with high-incidence disabilities. In essence, whereas students with high-incidence disabilities would either shrug their shoulders or respond, “I have no idea” when generating ideas, proficient writers would honor time as a contributor to the ideas that were generated. When composing her essay, Stella stopped to contemplate relevant ideas. For example, she said, “let me think about this for a second.” Joseph noted a number of times that he was thinking of reasons. For example, he said, “I am trying to think of a reason [pause]. I just went blank. I don’t know. He also stated, “hold on. I am trying to think” and “trying to think of my third reason.”

Some students generated ideas spontaneously as they were writing. For example, when Leah was asked how she came up with her ideas, she simply stated, “on the spot when I thought.” When asked how she came up with the ideas that she wrote, Becky asserted, “as I was writing I took my time – the ideas just sort of came to me... that I might not have thought of.” Whereas these students with high-incidence disabilities

exhibited idleness when generating ideas during “pretest,” during “posttest” with the TBGO, proficient writers paused or took time to reflect and to think of ideas.

**Table 8**

*Idea Generation Themes at “Posttest With the TBGO”*

Students with High-Incidence Disabilities	Proficient Writers	
Examples from Each Theme		
<p>“Because I usually think about if I ever have to do work on the weekends. It’s not very fun but having to go to school on the weekends probably isn’t one of the things I’d like to think about.” Ellie</p>	<p>Referencing Personal Experiences</p>	<p>“I am trying to think of something that I do on Saturday that like betters me. Like oh, it gives me time to study!” “So, I am going to touch up on that too because I understand it better since I am a person like that who needs Saturday to themself.” Stella</p>
<p>“Well, students need a break from school... They need to spend time with their family at least two days and have fun.” “Every day you have to wake up early to go to school and they don’t get that much sleep...Because they could wake up at like 10 and 11 and get more sleep.” Brandon</p>	<p>Considering the Perspectives of Others</p>	<p>“I also touched up previously that having Saturdays off would give students and the teachers time too because I was realizing that I have been talking about students a lot, but honestly having Saturdays off will also affect the teacher. So, obviously teachers want to spend time with their families and maybe just sleep in until noon maybe after teaching irresponsible middle schoolers.” Leah</p>
<p>“I have no idea how I am getting them.” Noah</p>	<p>Exhibiting Idleness</p>	

Students with High-Incidence Disabilities	Proficient Writers
Using Organizational Supports	<p>“Identify my opinion. Um, I need a hook first because that’s just what I am supposed to do. Usually, I ask a question... so I will try to think of a relevant question.”</p> <p>Stella</p>
Pausing to Think	<p>“I am trying to think of a reason [pause]. I just went blank. I don’t know.”</p> <p>“Hold on. I am trying to think.”</p> <p>Joseph</p>

*Note. Students with high-incidence disabilities and proficient writers both engaged in multiple idea generation processes across themes.*

### ***Idea Generation at “Posttest Without the TBGO”***

The use of thematic analysis was applied to answer a different dimension of the second research question: *To what extent does the use of the TBGO change the idea generation processes for middle school students with high-incidence disabilities and proficient writers when given a persuasive writing prompt?* The findings from this dimension of the second research question were done without the use of the TBGO and were also disaggregated for students with high-incidence disabilities and proficient writers. Themes were gleaned based on the data from the think aloud protocols that occurred during the “posttest without the TBGO.” This condition mirrored that of the “pretest” (see Chapter 3; Data Collection Procedures). As such, students with high-incidence disabilities generated ideas by (a) referencing personal experiences and (b) considering the perspectives of others. Exhibiting idleness was also an emergent theme

during the think aloud protocol (see Table 9). As a result of the TBGO being removed, themes for students with high-incidence disabilities were similar to “pretest” (referencing personal experiences and exhibiting idleness), however, after being provided with explicit instruction lessons centered on the genre of persuasive writing and after the use of the TBGO, students were able to transfer the idea generation process of *considering the perspectives of others* to their responses to persuasive writing prompts without the use of the TBGO. However, without the use of the TBGO, these students with high-incidence disabilities did not engage in multiple idea generation processes. This section will first describe the similarities in idea generation processes at posttest without the TBGO used by both students with high-incidence disabilities and proficient writers – *referencing personal experiences* and *considering the perspectives of others*. The following section will describe the differences in idea generation processes between students with high-incidence disabilities and proficient writers.

**Similarities in Idea Generation Processes.** Both students with high-incidence disabilities and proficient writers generated ideas for an opinion-based persuasive writing prompt during “posttest without the TBGO” through personal experiences and empathy. Both groups of students shared personal experiences and reminisced about an experience of another or considered an alternative viewpoint as a tool for generating ideas. The two prompt choices for “posttest without the TBGO” were (a) *Field trips are good experiences. Write an essay on whether or not your teacher should take the class on a field trip*, and (b) *Some teachers allow students to eat snacks in class. Write an essay on whether or not students should be allowed to eat in class.*

*Referencing Personal Experiences.* Both students with high-incidence disabilities and proficient writers generated ideas based on personal experiences (see Table 9). This was evidenced during “posttest with the TBGO” and “posttest without the TBGO.” During the posttest without the TBGO, many students related their own feelings of hunger during school. One student, Juliet exclaimed:

Because I actually don’t eat at home, and I am very hungry at school. And I do – I have these days where like I am at school and I am really hungry and they have like bagged food and I would ask the teacher if I could eat some and she would be like, “just wait! Just wait!” and I’m like “oh my gosh!”

Brandon’s response paralleled that of Juliet’s, as he considered having to wait until lunch to eat. He noted, “It’s not lunchtime yet but you’re probably hungry. And then lunch starts in like two hours and you’re hungry and your teacher is not letting you eat.”

On a more rudimentary level, Tony and Zack recalled times when they were also been hungry or when they have been able to eat snacks in class. Tony recounts, “because I eat snacks in class,” and Zack recounts, “because it [eating snacks in class] happened to me.”

One student with a high-incidence disability chose to respond to a different opinion-based persuasive writing prompt concerning class field trips. She generated ideas for her response through the lens of a personal experience. For example, she noted, “I mean like when I’ve been on field trips before like you’re like with your teacher and

everything and I don't know. It just builds the relationship between the teacher and her students.”

Similarly, proficient writers also generated ideas for an opinion-based persuasive writing prompt through personal experiences. In fact, nearly all proficient writers generated ideas in this way. When answering the prompt concerning eating snacks in class, Becky not only asserted why she chose that prompt – “I feel strongly about eating because I love to eat, and I like my snacks,” but she also went on to describe a particular personal experience. For example, she stated, “where there is more responsibility given, there is more trust. Like when I am at home the more chores or things that I have to do, the more freedom I get, which has trust between me and my parents.” Becky associated this personal experience with the responsibility that generally comes when teachers allow students to eat during class. Equivalently, Soraya shared a personal encounter she had when she did not eat enough breakfast as a rationale for why teachers should allow students to eat in class. She noted:

I know that if I didn't eat lunch, I would be very drowsy and wouldn't be able to concentrate in class. And I know like on test days my brain is working a lot like okay, think of the answer, do this, do that, and like I remember when we had like our [high-stakes state assessment], the first day, I just – I just couldn't do it. I had a weak breakfast, and my brain just wasn't working. It was like – I just couldn't – I didn't know what to write.

Additionally, other proficient writers were forthright about their personal feelings and encounters with eating snacks in class as a structure for generating ideas. Natalie

noted, “personally, when I eat while doing stuff it keeps me entertained and from getting distracted.” Juliana also considered her individual experiences as a process for generating ideas. For instance, she said:

I know for one explanation I can do that it kind of helps kids focus, I guess. Well, I know for me it does because if I am going from the 7 o'clock until like 12 without a snack, I am not going to be able to focus because I will be hungry.

Julie drew on a time in which she required a snack during the school day for health reasons. She considered how if teachers would allow students to eat snacks during class that those who may have individual circumstances which require them to eat during the day might not feel as “different.” She said, “I have like where I needed to have a snack at school prescribed to me, so it was helpful for other kids and not just me.” Comparatively, Kylie not only noted a personal experience for generating ideas, but she also exclaimed that the personal experience she had with eating snacks in class was a catalyst for her prompt selection. She stated, “I am going to do ‘some teachers allow the snacks’ because it’s more easy for me to write on because it just happened in my English class.”

This personal consciousness continued for proficient writers, including those who chose to answer the prompt surrounding field trips. Stella explicitly stated how she pondered her own experiences with field trips to generate ideas. She reflected, “I am trying to think about like what field trips do and like the one I’ve been on and from my experiences what has made them special compared to an average school day.” Joseph

also explicitly stated that he was trying to garner ideas based on his own experiences with field trips. He noted, “I like to go on field trips. It means one less day for me to be at school. Most of the times at least in my experience, there are multiple schools that go to a field trip. So, you get to meet a lot of people.” In addition, Graham thought about how his own experiences with field trips alleviated stress and used this notion to spark further ideas. He proclaimed:

I am thinking because it’s fun and it relieves stress. You might be partnered with someone. From my past experiences when I have gone on a field trip like I get partnered with either someone or like a group- I am in like a group of four instead of us being alone. Like I went to [a historic city] for a field trip and it was fun. I mean we just like walked around and stuff and there was this big open field that we played football in and other stuff like that. It’s also exciting because if your mom is a chaperone, it’s a bonus because they can pack your stuff and you don’t have to pack it yourself.

Aidan also described similar experiences with field trips. Although he did not explicitly state that his ideas were coming from personal experiences, it could be implied. Rather, he objectively stated, “classes should go on field trips because I think it can be a great way to learn about the subject you’re learning about. It’s also like a great way for students to bond and like do teamwork, I guess.” During “posttest without the TBGO” both students with high-incidence disabilities and proficient writers generated ideas by *referencing personal experiences*.

*Considering the Perspectives of Others.* Both proficient writers and students with high-incidence disabilities generated ideas by considering the perspectives of others or by putting themselves in the point of view of others (see Table 9). This theme emerged throughout all three writing environments (“pretest,” “posttest with TBGO,” and “posttest without the TBGO”) for proficient writers. However, generating ideas by *considering the perspectives of others* was a process that was only present during “posttest with the TBGO” and “posttest without the TBGO” for students with high-incidence disabilities. As such, the use of the TBGO amassed this idea generation process for students with high-incidence disabilities and it was maintained when the TBGO was removed. Additionally, while students with high-incidence disabilities and proficient writers both shared this idea generation process, only a small number of students with high-incidence disabilities engaged in this idea generation process compared to most of the proficient writers.

One student with high-incidence disabilities noted how some students may not be able to eat breakfast at home as a rationale for why teachers should allow students to eat snacks in class. For example, Ellie noted:

Some students might miss breakfast at home and might be hungry at school. Also, some students might be able to focus more with a full stomach than empty. Some people have early lunches and might get hungry throughout the day. And if you don't have much time to eat then you can't eat in class and it's going to ruin your day. You know

sometimes when people don't eat, they get really upset and their mood changes.

Ellie also took this empathetic approach a bit further, as she considered what the effect of being hungry might have – becoming upset. Similarly, when responding to the prompt centered around field trips, Drew expressed his empathetic stance about how field trips can enhance the learning of students. For instance, he noted, “because the kids like get a chance to get out of school for a day. It's a different form of learning that could be more beneficial... and technically gives them a chance to see the real world and more hands-on ideas.” Although in this example Drew is considering the emotions or feelings of others, he does this in a fairly objective or broader way.

Comparatively, proficient writers generated ideas by more substantially considering the perspectives of others. For example, Becky considered the need for snacks in class as a vehicle for improved cognitive functioning. She stated:

And then the nutrition one, one of my friends was like, she had a learning disability, so she went to this doctor to help with it, and they were like something essential about it is food, so if you are not eating the right food then it's hurting your brain in a way, so I knew that and I applied that to this.

Julie also considered the health factors of other students a vehicle for empathetically generating ideas. She noted, “kids might have certain dietary needs, such as diabetes or eating disorders, have been increasing greatly over the past years. She went on to describe another scenario in which a student might be hungry. This time, however,

she noted a potential effect, such as academic decline to appeal to teachers. For example, she mentioned, “when kids get hungry, they can’t focus as well. To illustrate, a student may be taking a math test ...but he can only think about how hungry he is. This results in him getting a bad test grade.”

Natalie produced a straightforward empathetic response when weighing if teachers should allow students to eat snacks in class. She simply stated, “I think teachers should allow kids to have snacks. First reason is if they don’t have time to eat in the morning, they have a chance to eat during the day.” Juliana also applied an empathetic approach to generating ideas in response to the prompt about snacks. However, her empathizing led her to an alternative response to her classmates. She considered how eating snacks might negatively impact several people. She noted:

For example, snacks may be distracting and loud... may be distracting and loud to other students. If a student spills their snack, it goes all over the floor, they may not be responsible enough to clean it all up. I feel like I should put something in there about like teachers having the opportunity to take snack time away if kids aren’t like responsible. To illustrate, students with severe allergies might have an allergic reaction to a snack being eaten around them cause them to go to the nurse.

When Soraya realized that she did not have an idea from a personal experience, she began to think more holistically or broadly about how to generate ideas. By doing so, she empathized with the basic responsibilities regarding snack management. Thus, she considered how eating snacks and class can ensue responsibility. As such, she noted:

So, I don't have that good of a personal story that I can use, so I am just going to go back to what I usually do and just state some facts because snacking does come with responsibilities as does eating in the cafeteria or at home because if you eat then you need to pick up after yourself.

The idea generation process of empathy extended beyond the prompt about snacks and into the prompt about field trips. Stella candidly considered other students when advocating for teachers taking students on field trips. She said, "many students wouldn't get to experience these activities otherwise." Joseph shared this same opinion and expanded his empathy to the learning preference of others. In this way, he mentioned, "they [field trips] allow children to see many things that you wouldn't see or understand in a classroom. It's more efficient for the visual learners and overall, it could be a good break/learning experience. Similarly, Leah considered how field trips can help students recognize their hobbies, passions, and future careers. She also insightfully expressed how field trips can provide students with good memories from their otherwise "mostly cringy" middle school experiences. She notes, "I think teachers should take their class on a field trip, because it can help with them learning more about themselves, with having good memories from that grade in school, and to help raise individuality in students." These examples illustrate the ways in which students with high-incidence disabilities and proficient writers generate ideas *by considering the perspectives of others* when the TBGO was removed.

**Unique Idea Generation Processes for High-Incidence Disabilities at "Posttest Without the TBGO."** While new idea generation processes emerged for

students with high-incidence disabilities across writing environments (“pretest,” “posttest with TBGO,” and “posttest without the TBGO”) this group continued to lack awareness for generating ideas during posttest with the TBGO – a theme that also emerged during pretest and posttest with the TBGO. This theme was consistently unique to students with high-incidence disabilities.

***Exhibiting Idleness.*** Only one student with high-incidence disabilities was unsure how to generate ideas at “posttest without the TBGO” (see Table 9). This is an improvement from “pretest” where five students with high-incidence disabilities did not know how to generate ideas. One student was unable to verbalize how to generate ideas across all three writing environments (pretest, posttest with the TBGO, and posttest without the TBGO). Without the support of the TBGO, this student became very anxious about producing an essay. He exclaimed, “I just keep drawing a blank on these! I’m still stressed! I say there is really nothing coming out for me.” This response suggests that exhibiting idleness is a stressful state for students, and thus learning a new idea generation process may not only improve writing outcomes but produce positive social-emotional effects as well.

**Unique Idea Generation Processes for Proficient Writers at “Posttest Without the TBGO.”** Proficient writers engaged in three idea generation processes during “posttest without the TBGO.” Proficient writers and students with high-incidence disabilities both generated ideas from personal experiences and through empathy during the “posttest without the TBGO.” However, these proficient writers generated ideas using organizational supports, which differed from the idea generation themes of students with

high-incidence disabilities (exhibiting idleness) during posttest without the TBGO. Additionally, whereas students with high-incidence disabilities did not use multiple idea generation processes without the TBGO, proficient writers maintained the use of multiple idea generation processes when the TBGO was removed. This section will discuss the using organizational supports and multiple processes uniquely used by proficient writers to generate ideas with the removal of the TBGO.

*Using Organizational Supports.* Proficient writers relied on organizational supports for generating ideas when they were given an opinion-based persuasive writing prompt with the TBGO removed (see Table 9). In other words, proficient writers maintained the use of this strategy when the TBGO was removed. This idea generation process was visible when proficient writers engaged in the posttest with the TBGO. In essence, proficient writers were able to transfer the organizational structures of the genre that are supported by the TBGO to a writing environment that did not contain the TBGO.

While the TBGO does not directly prompt students to use a “hook,” Becky considered this genre element as she generated ideas. For example, she stated, “So, to start I have the hook. I know that kids like snacks, so I am going to write the hook about that.” Stella referenced of the IDEAS mnemonic with the TBGO to orient and activate her ideas. She said, “and then I am going to identify my opinion that I have from IDEAS...then I am going to list my three reasons, and these are going to be my three paragraphs after this.” As such, Stella used the organizational structure of the TBGO to align her ideas. Additionally, Stella went on to illustrate how organization or the “look” of her essay fostered her ideas. For example, she stated, “I am going to add one more

sentence to this paragraph because it looks a little small right now. So, I am trying to think.” Similar to Stella, Julie mentioned of the IDEAS mnemonic and in particular the E, “Explain Why and Say More.” She contemplated this organizational structure as a sort of place holder for her ideas. As such, she mentioned, “I think I am going to move on to my next reason. ‘In addition, food gives kids nutrients, which is essential for their growth and development’ [rereading]. I don’t know, I might come back to the explanation later.”

Comparably, although she did not explicitly mention the TBGO, Soraya also spurred ideas from the organizational demands of the genre. Knowing the purpose of a persuasive essay, she weighed her ideas and considered which ideas would be better suited for convincing her readers. She explained:

Like, I only eat in second block, like at the start, not like smack in the middle of class, but I am not sure I should write that in my essay because only saying that you should eat at the start is sort of like in between the two things...so that would make my essay weaker. So, I don’t want to do that.

These examples illustrate the ways in which proficient writers recalled the organizational elements of the TBGO or past writing lessons to generate ideas for their writing. However, it is noteworthy that proficient writers did not pause to think as an idea generation process when the TBGO was removed.

***Multiple Processes.*** When the TBGO was removed, idea generation processes for proficient writers fell into three categories: (a) referencing personal experiences, (b) considering the perspectives of others, or (c) using organizational supports. However,

proficient writers also engaged in multiple idea generation processes during posttest without the TBGO. This theme of using multiple processes was evident during all three writing environments (“pretest,” “posttest with the TBGO,” and “posttest without the TBGO”). Most proficient writers employed multiple idea generation processes without the use of the TBGO. Some proficient writers engaged in two processes, such as referencing personal experiences and considering the perspectives of others, while others engaged in all three idea generation processes when responding to an opinion-based persuasive writing prompt. This notion of multiple idea generation processes differs for students with high-incidence disabilities. While students with high-incidence disabilities engaged in multiple idea generation processes during posttest with the TBGO, like proficient writers, students with high-incidence disabilities did not maintain the use of multiple processes once the TBGO was removed.

**Table 9**

Idea Generation Themes at “Posttest Without the TBGO”

Students with High-Incidence Disabilities	Proficient Writers	
Examples From Each Theme		
“Because I actually don’t eat at home, and I am very hungry at school.” Juliet	Referencing Personal Experiences	“I know that if I didn’t eat lunch, I would be very drowsy and wouldn’t be able to concentrate in class. And I know like on test days my brain is working a lot like okay, think of the answer, do this, do that, and like I remember when we had like our SOLs, the first day, I just- I just couldn’t do it. I had a weak breakfast, and my brain just wasn’t working. It was like- I just couldn’t - I didn’t know what to write.” Soraya

<p>“First off, I do believe kids should have snacks during class because sometimes a kid might miss breakfast and can’t wait for lunch so sometimes having snacks is helpful for that.” Ellie</p>	<p>Considering the Perspectives of Others</p>	<p>“So, first, some kids don’t eat breakfast in the morning. This means they might be hungry before lunch. Furthermore, the reason kids might have certain dietary needs, such as diabetes or eating disorders, have been increasing greatly over the past years.” Julie</p>
<p>“I just keep drawing a blank on these! I’m still stressed! I say there is really nothing coming out for me.” Noah</p>	<p>Exhibiting Idleness</p>	
	<p>Using Organizational Supports</p>	<p>“And then I am going to identify my opinion that I have from IDEAS. And that is, um, teachers should take students on field trips because, and then I am going to list my three reasons, and these are going to be my three paragraphs after this.” Stella</p>

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*Note. Proficient writers engaged in multiple idea generation processes across themes.*

## **Summary of Think Alouds for Students with High-Incidence Disabilities and Proficient Writers**

The qualitative data that emerged from the use of think aloud protocols unveiled the idea generation processes of eighth grade students with high-incidence disabilities and proficient writers. Themes emerged during the “pretest” to answer the first research question: *How do middle school students with high-incidence disabilities and proficient writers generate ideas when given a persuasive writing prompt* Findings indicate that students with high-incidence disabilities and proficient writers generate ideas by referencing personal experiences. Contrastingly, emerging themes for students with high-incidence disabilities were referring to the prompt and exhibiting idleness, whereas

proficient writers generated ideas by employing strategy use and considering the perspectives of others.

Thematic analysis was also used to answer the second research question: *To what extent does the use of the TBGO change the idea generation processes for middle school students with high-incidence disabilities and proficient writers when given a persuasive writing prompt?* Themes were gleaned based on the data from the think aloud protocols that occurred during the “posttest with the TBGO.” As such, findings indicate that students with high-incidence disabilities and proficient writers generate ideas by referencing personal experiences and considering the perspectives of others. Both groups also engaged in multiple idea generation processes when supported with the TBGO, however proficient writers used multiple idea generation processes independently during “pretest” and “posttest without the TBGO.” Contrastingly, students with high-incidence disabilities also continued to lack awareness for generating ideas, whereas proficient writers generated ideas using organizational supports and pausing to think.

The second research question was also investigated idea generation processes when the TBGO was removed from the writing environment for students with high-incidence disabilities and proficient writers. The findings from this dimension of the second research question indicate that students with high-incidence disabilities and proficient writers continued to generate ideas by referencing personal experiences and considering the perspectives of others without the TBGO. Contrastingly, students with high-incidence disabilities continued to lack awareness for generating ideas, whereas proficient writers maintained the idea generation process of generating ideas using

organizational supports. Additionally, when the TBGO was removed, only proficient writers maintained multiple idea generation processes.

### **Quantitative Writing Outcomes**

As students engaged in think aloud protocols, their writing performance was evaluated quantitatively on three different outcome measures: number of ideas generated, the total written words, and writing quality (identify your opinion, determine reasons, explain why or say more, add transition words, summarize). Writing performances on such outcome measures for students high-incidence disabilities and proficient writers were assessed during “pretest,” “posttest with TBGO,” and “posttest without TBGO” using descriptive and inferential statistics.

Adhering to the nature of the research questions guiding this study, the results will first be disaggregated for students with high-incidence disabilities and proficient writers. Then, comparisons of the outcome measures will be offered between students with high-incidence disabilities and proficient writers. Descriptive data and nonparametric statistics for writing outcomes for students with high-incidence disabilities and proficient writers will also be presented.

#### ***Writing Outcomes Students with High-Incidence Disabilities***

Descriptive data will be presented that answers the third research question, “*To what extent do middle school students with high-incidence disabilities differ in the number of ideas, the total number of written words, and writing quality when given a persuasive writing prompt when writing with and without the TBGO?*” This is followed by the nonparametric test and the Wilcoxon Signed-Rank describing the differences

overtime in writing outcomes using the TBGO for students with high-incidence disabilities.

Descriptive data for students with high disabilities' performance, which includes total number of ideas, total written words, and writing quality are presented in Table 10. Table 10 offers descriptive data for the aforementioned outcome measures during "pretest," "posttest with the TBGO," and "posttest without the TBGO." During "pretest" students with high-incidence disabilities averaged 4.00 ( $SD = 3.024$ ) ideas, 45.88 ( $SD = 43.920$ ) total written words, and 2.50 ( $SD = 1.309$ ) writing quality. The number of ideas during the "pretest" for students with high-incidence disabilities ranged from zero ideas to ten ideas. The number of written words for students with disabilities during the "pretest" ranged from zero words to 136 words. Writing quality for students with high-incidence disabilities during the "pretest" ranged from zero to four.

During "posttest with the TBGO" students with high-incidence disabilities averaged 8 ( $SD = 4.140$ ) ideas, 100.25 ( $SD = 44.194$ ) total written words, and 7.75 ( $SD = 1.035$ ) writing quality. The number of ideas during the "posttest with the TBGO" for students with high-incidence disabilities ranged from two ideas to 16 ideas. The number of written words for students with high-incidence disabilities during the "posttest with the TBGO" ranged from 61 words to 198 words. Writing quality for students with high-incidence disabilities during the "posttest with the TBGO" ranged from six to nine.

During "posttest without the TBGO" students with high-incidence disabilities averaged 6.50 ( $SD = 3.586$ ) ideas, 75.37 ( $SD = 42.366$ ) total written words, and 6.13 ( $SD = 2.642$ ) writing quality. The number of ideas during the "posttest without the TBGO"

for students with high-incidence disabilities ranged from one idea to 12 ideas. The number of written words for students with high-incidence disabilities during the “posttest without the TBGO” ranged from 15 words to 131 words. Writing quality for students with high-incidence disabilities during the “posttest without the TBGO” ranged from one to nine.

**Table 10**

*Descriptive Data for Students with High-Incidence Disabilities (n = 8)*

	Number of Ideas <i>M(SD)</i>	Total Written Words <i>M(SD)</i>	Writing Quality <i>M(SD)</i>
“Pretest”	4.00(3.024)	45.88(43.920)	2.50(1.309)
“Posttest with TBGO”	8.00(4.140)	100.25(44.194)	7.75(1.035)
“Posttest without TBGO”	6.50(3.586)	75.37(42.366)	6.13(2.642)

*Note. M = Mean, SD = Standard Deviation*

The nonparametric test, the Wilcoxon Signed-Rank, was used for describing the differences over time between students with high-incidence disabilities in writing outcomes. Nonparametric tests were used when evaluating the writing outcomes for students with high-incidence disabilities during “pretest,” “posttest with the TBGO,” and “posttest without the TBGO.” Table 11 provides the results of the Wilcoxon Signed-Rank test and accompanying p-values.

***Number of Ideas.*** The Wilcoxon Signed-Rank test was conducted for the number of ideas during “pretest,” “posttest with the TBGO,” and “posttest without the TBGO” to assess differences in performance for students with high-incidence disabilities. The

results of the test between “pretest” and “posttest with the TBGO” were significant:  $z = -2.536$  (.011),  $p < .05$  (see Table 13). Therefore, students with high-incidence disabilities demonstrated a significant difference in the number of ideas between “pretest” and “posttest with the TBGO.”

The results of the Wilcoxon Signed-Rank test for the number of ideas generated between “pretest” and “posttest without the TBGO” were significant:  $z = -2.546$  (.011),  $p < .05$  (see Table 11). Therefore, students with high-incidence disabilities demonstrated a significant difference in the number of ideas between “pretest” and “posttest without the TBGO.”

**Total Written Words.** The Wilcoxon Signed-Rank test was conducted for the total number of written words during “pretest,” “posttest with the TBGO,” and “posttest without the TBGO” to assess differences in performance for students with high-incidence disabilities. The results of the test between “pretest” and “posttest with the TBGO” were significant:  $z = -2.521$  (.012),  $p < .05$  (see Table 11). Therefore, students with high-incidence disabilities demonstrated a significant difference in the total number of written words between “pretest” and “posttest with the TBGO.”

The results of the Wilcoxon Signed-Rank test for the total number of written words generated between “pretest” and “posttest without the TBGO” were significant:  $z = -2.100$  (.036),  $p < .05$  (see Table 11). Therefore, students with high-incidence disabilities demonstrated a significant difference in the total number of written words between “pretest” and “posttest without the TBGO.”

**Writing Quality.** The Wilcoxon Signed-Rank test was conducted for writing quality during “pretest,” “posttest with the TBGO,” and “posttest without the TBGO” to assess differences in performance for students with high-incidence disabilities. The results of the test between “pretest” and “posttest with the TBGO” were significant:  $z = -2.558 (.011), p < .05$  (see Table 11). Therefore, students with high-incidence disabilities demonstrated a significant difference in writing quality between “pretest” and “posttest with the TBGO.”

The results of the Wilcoxon Signed-Rank test for the total number of written words generated between “pretest” and “posttest without the TBGO” were significant:  $z = -2.555 (.011), p < .05$  (see Table 11). Therefore, students with high-incidence disabilities demonstrated a significant difference in writing quality between “pretest” and “posttest without the TBGO.”

**Table 11**

*Wilcoxon Signed-Rank for Students with High-Incidence Disabilities (n =8)*

	Ideas Pre – Ideas Post TBGO	Ideas Pre – Ideas Post No TBGO	TWW Pre – TWW Post TBGO	TWW Pre – TWW Post No TBGO	Elements Pre – Elements Post TBGO	Elements Pre – Elements Post No TBGO
Z	-2.536	-2.546	-2.521	-2.100	-2.558	-2.555
Asymp. Sig (2- tailed)	.011	.011	.012	.036	.011	.011

*Note. TWW = Total Written Words*

### ***Writing Outcomes for Proficient Writers***

Descriptive data will first be presented to answer the third research question, “*To what extent do middle school proficient writers differ in the total number of written words, the number of ideas generated, and writing quality when given a persuasive writing prompt when writing with and without the TBGO?*” Then, the nonparametric test, the Wilcoxon Signed-rank will be presented for describing the differences overtime in writing outcomes for proficient writers using the TBGO.

Descriptive data for proficient writers’ performance, which includes total number of ideas, total written words, and writing quality is presented in Table 12. Table 12 offers descriptive data for the aforementioned outcome measures during “pretest,” “posttest with the TBGO,” and “posttest without the TBGO.” During “pretest” proficient writers averaged 8.45 ( $SD = 2.505$ ) ideas, 180.27 ( $SD = 113.443$ ) total written words, and 4.36 ( $SD = 1.027$ ) writing quality. The number of ideas during the “pretest” for proficient writers ranged from five ideas to 15 ideas. The number of written words for proficient writers during the “pretest” ranged from 63 words to 402 words. Writing quality for proficient writers during the “pretest” ranged from three to six. Given the rubric for assessing writing quality, 10 is the maximum score a student could receive.

During “posttest with the TBGO” proficient writers averaged 13.09 ( $SD = 5.338$ ) ideas, 198.73 ( $SD = 99.213$ ) total written words, and 9.45 ( $SD = 0.820$ ) writing quality. The number of ideas during the “posttest with the TBGO” for proficient writers ranged from seven ideas to 26 ideas. The number of written words for proficient writers during

the “posttest with the TBGO” ranged from 86 words to 450 words. Writing quality for proficient writers during the “posttest with the TBGO” ranged from eight to 10.

During “posttest without the TBGO” proficient writers averaged 13.64 ( $SD = 6.947$ ) ideas, 239.18 ( $SD = 155.151$ ) total written words, and 8.64 ( $SD = 1.804$ ) writing quality. The number of ideas during the “posttest without the TBGO” for proficient writers ranged from seven ideas to 29 ideas. The number of written words for proficient writers during the “posttest without the TBGO” ranged from 76 words to 578 words. Writing quality for proficient writers during the “posttest without the TBGO” ranged from four to 10.

**Table 12**

*Descriptive Data for Proficient Writers (n = 11)*

	Number of Ideas M(SD)	Total Written Words M(SD)	Writing Quality M(SD)
“Pretest”	8.45(2.505)	180.27(113.443)	4.36(1.027)
“Posttest with TBGO”	13.09(5.338)	198.73(99.213)	9.45(0.820)
“Posttest without TBGO”	13.64(6.947)	239.18(155.151)	8.64(1.804)

*Note. M = Mean, SD = Standard Deviation*

The nonparametric test, the Wilcoxon Signed-Rank, was used to describe the differences over time between proficient writers in writing outcomes. Nonparametric tests were used when evaluating the writing outcomes for proficient writers during “pretest,” “posttest with the TBGO,” and “posttest without the TBGO.” Table 13 provides the results of the Wilcoxon Signed-Rank test and accompanying p-values.

**Number of Ideas.** The Wilcoxon Signed-Rank test was conducted for the number of ideas during “pretest,” “posttest with the TBGO,” and “posttest without the TBGO” to assess differences in performance for proficient writers. The results of the test between “pretest” and “posttest with the TBGO” were significant  $z = -2.374 (.018), p < .05$  (see Table 13). Therefore, proficient writers demonstrated a significant difference in the number of ideas between “pretest” and “posttest with the TBGO.”

The results of the Wilcoxon Signed-Rank test for the number of ideas generated between “pretest” and “posttest without the TBGO” were not significant:  $z = -1.922 (.055), p < .05$  (see Table 13), however, it is noteworthy to mention that this result indicates a  $p$ -value that is near a significant value. However, with a 95% confidence interval, proficient writers did not demonstrate a significant difference in the number of ideas between “pretest” and “posttest without the TBGO.”

**Total Written Words.** The Wilcoxon Signed-Rank test was conducted for the total number of written words during “pretest,” “posttest with the TBGO,” and “posttest without the TBGO” to assess differences in performance for proficient writers. The results of the test between “pretest” and “posttest with the TBGO” were not significant:  $z = -7.11 (.477), p < .05$  (see Table 13). Therefore, proficient writers did not demonstrate a significant difference in the total number of written words between “pretest” and “posttest with the TBGO.”

The results of the Wilcoxon Signed-Rank test for the total number of written words generated between “pretest” and “posttest without the TBGO” were not significant:  $z = -1.580 (.114), p < .05$  (see Table 13). Therefore, proficient writers did not

demonstrate a significant difference in the total number of written words between “pretest” and “posttest without the TBGO.”

**Writing Quality.** The Wilcoxon Signed-Rank test was conducted for writing quality during “pretest,” “posttest with the TBGO,” and “posttest without the TBGO” to assess differences in performance for proficient writers. The results of the test between “pretest” and “posttest with the TBGO” were significant:  $z = -2.989 (.003), p < .05$  (see Table 13). Therefore, proficient writers demonstrated a significant difference in writing quality between “pretest” and “posttest with the TBGO.”

The results of the Wilcoxon Signed-Rank test for the total number of written words generated between “pretest” and “posttest without the TBGO” were significant  $z = -2.965 (.003), p < .05$  (see Table 13). Therefore, proficient writers demonstrated a significant difference in writing quality between “pretest” and “posttest without the TBGO.”

**Table 13**

*Wilcoxon Signed-Rank for Proficient Writers (n = 11)*

	Ideas Pre – Ideas Post TBGO	Ideas Pre – Ideas Post No TBGO	TWW Pre – TWW Post TBGO	TWW Pre – TWW Post No TBGO	Elements Pre – Elements Post TBGO	Elements Pre – Elements Post No TBGO
Z	-2.374	-1.922	-7.11	-1.580	-2.989	-2.965
Asymp. Sig (2- tailed)	.018	.055	.477	.114	.003	.003

*Note. TWW = Total Written Words*

## ***Writing Outcomes Between Proficient Writers and Students with High-Incidence Disabilities***

The qualitative data from the themes was quantitized to answer the fifth research question, *“To what extent do middle school students with high-incidence disabilities and proficient writers differ in their idea generation processes in relation to the number of ideas generated when given a persuasive writing prompt when writing with and without the TBGO? Quantitizing qualitative data can facilitate the merging and comparing of different data sources (Happ et al., 2006) and makes “available techniques which add power and sensitivity to individual judgment when one attempts to detect and describe patterning in a set of observations” (Weinstein & Tamur, 1978, p. 140).*

### **Mixed Analysis**

A graphical table as a visual for data integration is used to illustrate a mixed analysis of the findings. As such, the integrated data (see Table 16) features the qualitative and the quantitized data for each case (students with high-incidence disabilities, proficient writers) in a manner that can be studied together (O’Cathain et al., 2010).

### ***Similarities in Idea Generation***

While students with high-incidence disabilities and proficient writers both generated ideas by referencing personal experiences across writing contexts, the quantitized thematic data indicate that proficient writers engage in this idea generation process at a higher frequency (82%) compared to students with high-incidence disabilities (12.5%) at “pretest.” When students with high-incidence disabilities and

proficient writers were given a validated writing support (the TBGO), both groups of students engaged in idea generation processes pertaining to personal experiences to a similar degree (i.e., 50% of students with high-incidence disabilities compared to 55% of proficient writers). However, when the TBGO was removed (i.e., “posttest without the TBGO”), proficient writers’ use of generating ideas by referencing personal experiences exceeded students’ with high-incidence disabilities (i.e., 91% compared to 62.5%). Both groups of students generated ideas by referencing personal experiences to a greater degree during “posttest without the TBGO” compared to “pretest.”

**Table 14**

*Graphical Display of Mixed Analysis*

Similar Themes	Case	Percentage of Participants <sup>a</sup>	Writing Context	Number of Ideas M(SD)
Referencing Personal Experiences	High-Incidence Disabilities	12.5%	Pretest	5(0)
		50%	Posttest w/TBGO	10.25(4.19)
		62.5%	Posttest w/o TBGO	6.4(2.70)
	Proficient Writers	82%	Pretest	9(2.40)
		55%	Posttest w/TBGO	13.3(7.12)
		91%	Posttest w/o TBGO	12.1(4.98)
Considering the Perspectives of Others	High-Incidence Disabilities	0%	Pretest	-
		62.5%	Posttest w/TBGO	8.6(4.39)
		25%	Posttest w/o TBGO	9.5(3.54)
	Proficient Writers	45%	Pretest	8.6(3.85)
		73%	Posttest w/TBGO	15(5.01)
		73%	Posttest w/o TBGO	15.5(7.35)
Multiple Processes	High-Incidence Disabilities	0%	Pretest	-
		25%	Posttest w/TBGO	11(7.07)
		0%	Posttest w/o TBGO	-
	Proficient	54.5%	Pretest	9.5(2.81)

Similar Themes	Case	Percentage of Participants <sup>a</sup>	Writing Context	Number of Ideas M(SD)
	Writers	55%	Posttest w/TBGO	15.8(5.56)
		64%	Posttest w/o TBGO	13.57(5.32)
Unique Themes	Case	Percentage of Participants <sup>a</sup>	Writing Context	Number of Ideas M(SD)
Exhibiting idleness	High-Incidence	62.5%	Pretest	4.2(3.63)
	Disabilities	25%	Posttest w/TBGO	3.5(2.12)
		12.5%	Posttest w/o TBGO	1(0)
Referring to the Prompt	High-Incidence	25%	Pretest	3(2.83)
	Disabilities	0%	Posttest w/TBGO	-
		0%	Posttest w/o TBGO	-
Employing Strategy Use	Proficient	45%	Pretest	9.75(3.59)
	Writers	0%	Posttest w/TBGO	-
		0%	Posttest w/o TBGO	-
Using Organizational Supports	Proficient	0%	Pretest	-
	Writers	36%	Posttest w/TBGO	17.75(5.56)
		36%	Posttest w/o TBGO	16(5.72)
Pausing to Think	Proficient	0%	Pretest	-
	Writers	36%	Posttest w/TBGO	12.25(2.75)
		0%	Posttest w/o TBGO	-

*Note. n = 8 for students with high-incidence disabilities; n = 11 for proficient writers.*

<sup>a</sup> *Reflects the number of participants per case in which the theme occurred.*

Students with high-incidence disabilities and proficient writers both generated ideas considering the perspectives of others across writing contexts. The quantitized thematic data indicate that proficient writers engage in this idea generation process at a higher frequency (45%) compared to students with high-incidence disabilities (0%) at

“pretest.” When students with high-incidence disabilities and proficient writers were given a validated writing support (the TBGO), both groups of students engaged in idea generation processes pertaining to empathy to a similar degree (i.e., 62.5% of students with high-incidence disabilities compared to 73% of proficient writers). It is noteworthy that students with high-incidence disabilities did not engage in an empathetic idea generation process without the TBGO, however, when given the TBGO, this group of students engaged in this new idea generation process. However, when the TBGO was removed (i.e., “posttest without the TBGO”), proficient writers generated ideas by considering the perspectives of others exceeded students’ with high-incidence disabilities (i.e., 73% compared to 25%). Both groups of students were able to maintain this idea generation process without the support of the TBGO. However, both groups of students generated ideas by considering the perspectives of others to a greater degree during “posttest without the TBGO” compared to “pretest.”

Additionally, students with high-incidence disabilities and proficient writers both generated ideas using multiple idea generation processes across writing contexts. The quantitized thematic data indicate that proficient writers engage in this idea generation process at a higher frequency (54.5%) compared to students with high-incidence disabilities (0%) at “pretest.” Thus, it makes sense that proficient writers use multiple strategies when generating ideas compared to students with high-incidence disabilities. When students with high-incidence disabilities and proficient writers were given a validated writing support (the TBGO), both groups of students engaged in multiple idea generation processes to a somewhat discrepant degree (i.e., 25% of students with high-

incidence disabilities compared to 55% of proficient writers). It is noteworthy that students with high-incidence disabilities did not engage in multiple idea generation processes without the TBGO, however, when given the TBGO, this group of students engaged in a not only new idea generation process (e.g., considering the perspectives of others), as well as multiple idea generation processes. However, when the TBGO was removed (i.e., “posttest without the TBGO”), proficient writers use of multiple idea generation processes far exceeded that of students’ with high-incidence disabilities (i.e., 64% compared to 0%). Therefore, it is evident that without the use of the TBGO, students with high-incidence disabilities were unable to engage in multiple idea generation processes.

Table 14 illustrates the average and standard deviations of the number of ideas generated for each theme and for each group of students. Writers who used organizational supports to generate ideas appeared to produce the largest quantity of ideas. The use of multiple idea generation processes as well as consideration of the perspectives of others also yielded higher quantities of ideas. While both students with high-incidence disabilities and proficient writers generated ideas referencing personal experiences and considering the perspectives of others, the quantity of ideas differed. For example, during “posttest without the TBGO” students with high-incidence disabilities generated an average of 6.4 ideas when referencing personal experiences, whereas proficient writers generated almost double the average amount of ideas with an average of 12.1 ideas. Similarly, during “posttest without the TBGO” students with high-incidence disabilities generated an average of 9.5 ideas when considering the perspectives of others, whereas

proficient writers generated a significantly more with an average of 15.5 ideas. Although students with high-incidence disabilities and proficient writers share idea generation processes, the number of ideas generated using these shared processes differs.

### ***Differences in Idea Generation***

Students with high-incidence disabilities uniquely engaged in idea generation processes, such as exhibiting idleness and referring to the prompt. This group of students exhibited idleness for generating ideas throughout each of the writing contexts (“pretest,” “posttest with the TBGO,” “posttest without the TBGO”), however, this idea generation process decreased throughout each of the writing contexts (e.g., 62.5% during “pretest,” 25% during “posttest with the TBGO,” 12.5% during “posttest without the TBGO”). Although students with high-incidence disabilities became more strategic when generating ideas and became less likely to lack awareness for generating ideas, the use of the TBGO appears to not be enough to provide this group of students with more strategic avenues for generating ideas. Furthermore, students with high-incidence disabilities only engaged in the idea generation process of referring to the prompt during “pretest” but not during any other writing context.

Proficient writers uniquely engaged in idea generation processes, such as employing strategy use, using organizational structures, and pausing to think. Proficient writers only engaged in the idea generation process of employing strategy use during “pretest” but not during any other writing context. This group of students generated ideas using organizational supports and pausing to think throughout the writing contexts “posttest with the TBGO” and “posttest without the TBGO. Proficient writers engaged in

an organizational idea generation process at the same volume (36%) during “posttest without the TBGO” and during “posttest with the TBGO” (36%). This may have been because the TBGO already provided an organizational structure for students to follow, and therefore, did not require students to independently use this process for generating ideas during “posttest with the TBGO.” Findings also indicate that proficient writers only engaged in a “pausing to think” idea generation process when using the TBGO.

### **Summary of Findings**

The results of this exploratory mixed methods study were presented qualitatively and quantitatively. Students with high-incidence disabilities were advised to provide a think aloud as they wrote, with particular attention to how they generated ideas. Proficient writers and students with high-incidence disabilities engaged in a think aloud protocol during three different writing contexts: (a) “pretest,” (b) “posttest with the TBGO,” and (c) “posttest without the TBGO.” During this time, themes emerged and writing outcomes (the number of ideas, total written words, and writing quality) were analyzed quantitatively.

Using thematic analysis, during “pretest” students with high-incidence disabilities and proficient writers both generated ideas by referencing personal experiences. This theme was shared among the two groups throughout each writing context. However, the two groups differed during “pretest” in that themes for students with high-incidence disabilities were referring to the prompt and exhibiting idleness. Students with high-incidence disabilities exhibited idleness generating ideas throughout each condition as well. During “pretest,” however, proficient writers differed from students with high-

incidence disabilities in that they also generated ideas by employing strategy use and considering the perspectives of others. Additionally, proficient writers generated ideas using multiple idea generation processes throughout all three writing environments.

After receiving lessons centered on orientation and use of the TBGO and instruction on the genre of persuasive writing, students with high-incidence disabilities and proficient writers engaged in a second think aloud protocol, this time, using the TBGO. Students with high-incidence disabilities again generated ideas by referencing personal experiences, however, with the use of the TBGO, they shared additional idea generation process with proficient writers – considering the perspectives of others. As such, students with high-incidence disabilities and proficient writers both generated ideas by referencing personal experiences and considering the perspectives of others when using the TBGO. However, while most proficient writers generated ideas by considering the perspectives of others when using the TBGO, most students with high-incidence disabilities generated ideas from personal experiences.

Additionally, when using the TBGO, both students with high-incidence disabilities and proficient writers engaged in multiple idea generation processes as compared to a single idea generation process when not using the TBGO for students with high-incidence disabilities. Consequently, proficient writers were more likely to engage in multiple idea generation processes when using the TBGO than students with high-incidence disabilities. Students with high-incidence disabilities and proficient writers also differed in their idea generation processes during “posttest with the TBGO.” Students with high-incidence disabilities again exhibited idleness during the think aloud protocol,

whereas proficient writers generated ideas using organizational structures and pausing to think. The use of the TBGO prompted proficient writers to generate ideas through the organizational parameters provided by the TBGO and to also consider pausing to generate ideas.

Lastly, students with high-incidence disabilities and proficient writers engaged in a think aloud protocol during a “posttest without the TBGO.” Similar to the “posttest with TBGO” writing context, both students with high-incidence disabilities and proficient writers shared the idea generation process of referencing personal experiences and considering the perspectives of others. Students with high-incidence disabilities were able to transfer the idea generation process of considering the perspectives of others with the removal of the TBGO. Students with high-incidence disabilities and proficient writers also differed in their idea generation processes during “posttest without the TBGO.” Students with high-incidence disabilities again exhibited idleness during the think aloud protocol. Contrastingly, proficient writers generated ideas during “posttest without the TBGO” using organizational supports. This was a process that was maintained from “posttest with the TBGO” to “posttest without the TBGO.” Additionally, proficient writers also engaged in multiple idea generation processes during “posttest without the TBGO.” This avenue for generating ideas was also maintained from “posttest with TBGO” to “posttest without TBGO,” whereas it was not maintained for students with high-incidence disabilities.

Writing outcomes for students with high-incidence disabilities and proficient writers were analyzed quantitatively using descriptive data and nonparametric statistics.

Students with high-incidence disabilities demonstrated a statistically significant difference on all outcome measures. As such, there was a statistically significant difference in the number of ideas generated between “pretest” to “posttest with the TBGO” and between “pretest” to “posttest without the TBGO.” Students with high-incidence disabilities demonstrated a statistically significant difference in the total number of written words between “pretest” to “posttest with the TBGO” and between “pretest” to “posttest without the TBGO.” Students with high-incidence disabilities demonstrated a statistically significant difference in writing quality between “pretest” to “posttest with the TBGO” and between “pretest” to “posttest without the TBGO.”

Proficient writers demonstrated a statistically significant difference in the number of ideas generated between “pretest” to “posttest with the TBGO” but did not demonstrate a statistically significant difference in the number of ideas between “pretest” to “posttest without the TBGO.” Proficient writers did not demonstrate a statistically significant difference in the total number of written words between “pretest” to “posttest with the TBGO” and between “pretest” to “posttest without the TBGO.” Proficient writers demonstrated a statistically significant difference in writing quality between “pretest” to “posttest with the TBGO” and between “pretest” to “posttest without the TBGO.” Quantitizing the qualitative themes highlighted the differences between themes for students with high-incidence disabilities and proficient writers.

## Chapter Five

This chapter discusses the major findings from the exploratory mixed methods study. This study explored and compared the idea generation processes and writing outcomes of eighth grade students with high-incidence disabilities and proficient writers. Students with high-incidence disabilities and proficient writers engaged in a think aloud protocol during “pretest,” sharing idea generation processes, while simultaneously composing an essay in response to an opinion-based persuasive writing prompt. Both groups received instructional lessons on the genre of persuasive writing and orientation to the technology-based graphic organizer (TBGO; see Chapter 3). Students next engaged in a second think aloud where both groups participated in identical data collection procedures while writing within the TBGO. Finally, a third think aloud was conducted without the TBGO, where both groups participated in a think aloud that captured idea generation processes, while they concurrently produced a written essay. The writing context of this third think aloud without the TBGO mirrored “pretest” conditions. Idea generation processes were analyzed thematically while writing outcomes were analyzed quantitatively. This chapter first begins by highlighting the major findings of the study – first qualitatively and then quantitatively. Implications for practice will be discussed, followed limitations and recommendations for future research. This chapter will close with final conclusions.

## Summary of Findings

The major qualitative and quantitative findings gleaned from the study revealed:

1. When given an opinion-based persuasive writing prompt, students with high-incidence disabilities and proficient writers both generated ideas based on personal experiences. Both groups of students generated ideas by referencing personal experiences throughout each writing context (“pretest,” “posttest with the TBGO,” and “posttest without the TBGO”).
2. Students with high-incidence disabilities generated ideas by considering the perspectives of others only during “posttest with the TBGO” and “posttest without the TBGO.” Yet, proficient writers generated ideas by considering the perspectives of others throughout each writing context (“pretest,” “posttest with the TBGO,” and “posttest without the TBGO”).
3. Only during “posttest with the TBGO” did students with high-incidence disabilities engage in multiple idea generation processes. However, throughout all three writing contexts, proficient writers generated ideas using multiple idea generation processes.
4. Students with high-incidence disabilities generated ideas by referring to the prompt to insert their opinion as an idea generation process.
5. Students with high-incidence disabilities exhibited idleness throughout each writing context (“pretest,” “posttest with the TBGO,” and “posttest without the TBGO”). However, whereas five students exhibited idleness in generating ideas

during “pretest,” only one student continued to exhibit idleness during “posttest without the TBGO.”

6. Proficient writers generated ideas by employing strategy use during “pretest,” however, this seemed to shift during “posttest with the TBGO” and “posttest without the TBGO” to generating ideas using organizational supports.
7. Proficient writers generated ideas by pausing to think, or by taking time to think and ponder ideas, during “posttest with TBGO.”
8. For students with high-incidence disabilities there was a statistically significant difference in the number of ideas generated, the total number of written words, and writing quality from “pretest” to “posttest with the TBGO” and from “pretest” to “posttest without the TBGO.”
9. For proficient writers there was a statistically significant difference in the number of ideas from “pretest” to “posttest with the TBGO” but not from “pretest” to “posttest without the TBGO.” There were no statistically significant differences in the total number of written words from “pretest” to “posttest with the TBGO” and from “pretest” to “posttest without the TBGO.” There was a statistically significant difference in writing quality “pretest” to “posttest with the TBGO” and from “pretest” to “posttest without the TBGO.”

Each of these findings are discussed further in the following sections. The findings are compared between students with high-incidence disabilities and proficient writers across the three writing contexts (“pretest,” “posttest with the TBGO,” and “posttest without the TBGO”). As such, the qualitative findings illustrating the

similarities in idea generation processes for the two groups are discussed across writing contexts (“pretest,” “posttest with the TBGO,” and “posttest without the TBGO”). Next, the differences or unique idea generation processes for students with high-incidence disabilities and proficient writers are described. Then, the quantitative findings between the two groups are compared.

### **Similarities in Idea Generation Processes Between Students with High-Incidence Disabilities and Proficient Writers**

Students with high-incidence disabilities and proficient writers unveiled their idea generation processes while constructing a written response to an opinion-based persuasive writing prompt. These idea generation processes were captured using a think aloud in three different writing contexts, including “pretest,” “posttest with the TBGO,” and “posttest without the TBGO.” These similarities between students with high-incidence disabilities and proficient writers included the idea generation processes of (a) referencing personal experiences and (b) considering the perspectives of others. Additionally, both groups of students used multiple idea generation processes throughout different writing contexts. The subsequent sections will describe these similarities in idea generation processes between groups and across writing contexts (“pretest,” “posttest with the TBGO,” and “posttest without the TBGO”).

#### ***Referencing Personal Experiences***

Students with high-incidence disabilities and proficient writers generated ideas based on personal experiences throughout each writing context (“pretest,” “posttest with the TBGO,” and “posttest without the TBGO”). This was the only idea generation

process during “pretest” that was similar among both students with high-incidence disabilities and proficient writers. That said, during “pretest” only one student with high-incidence disabilities (13%) generated ideas based on personal experience, compared to four students (50%) during “posttest with the TBGO,” and five students (63%) during “posttest without the TBGO.” In essence, it seemed as though when provided with the support of the TBGO, students were able to increase their ability to generate ideas by referencing personal experiences, while also maintaining this process when the TBGO was removed (“posttest without the TBGO”). Although no previous studies were found that examined the idea generation processes for students with high-incidence disabilities, previous research has demonstrated that the use of a scaffolded web-based program (TELE-Web) seemed to support writing performance of students with learning disabilities by prompting and guiding the cognitive work of generating, organizing, and producing ideas (Englert et al., 2007). The notion of the use of scaffolds to increase writing quantity, which would seemingly accrue ideas, is not novel, as the use of graphic organizers and mnemonic devices have been well documented as writing scaffolds that boost writing quantity (Evmenova et al., 2020; Garwood et al., 2019; Ozdowska et al., 2021; Regan et al., 2018).

However, while previous research has demonstrated that the use of scaffolds and supports increase writing quantity for students with high-incidence disabilities, and therefore, likely the number of ideas, what is not known is *how* students (students with high-incidence disabilities and proficient writers alike) generate ideas. Additionally, it is unknown the extent to which the use of previously validated writing tools (i.e., the

TBGO) impact the idea generation process for students with high-incidence disabilities and proficient writers. Findings from this study demonstrate that both students with high-incidence disabilities and proficient writers generate ideas from personal experiences without the use of any scaffolds or supports. The following sections will continue to explore the idea generation processes for students with high-incidence disabilities and proficient writers with and without the use of the TBGO.

### *Considering the Perspectives of Others*

Proficient writers consistently generated ideas throughout all three writing contexts through empathy by considering the point of view of others or potential “characters” within their persuasive arguments – considering the perspectives of others. Students with high-incidence disabilities shared this idea generation process with proficient writers, however only during “posttest with the TBGO” and “posttest without the TBGO.” As such, it is plausible that the organizational structures of the TBGO prompted students with high-incidence disabilities to take more time to think and to plan, therefore, they were able to consider the perspective of others, thus generating ideas by considering the perspectives of others. Additionally, it is important to note that students with high-incidence disabilities were able to maintain this idea generation process once the TBGO was removed (“posttest without the TBGO”), but to a lesser degree. For instance, during the think aloud for “posttest with the TBGO,” six students with high-incidence disabilities (75%) generated ideas by considering the perspectives of others, however, when the TBGO was removed (“posttest without the TBGO”) only two students (25%) generated ideas by considering the perspectives of others. This indicates

that students with high-incidence disabilities were able to maintain idea generation processes when scaffolding supports are removed. Previous research indicates that students with high-incidence disabilities can maintain writing performance when interventions and supports are removed (e.g., Boykin et al., 2019; Evmenova et al., 2016), potentially insinuating that idea generation processes are able to be maintained as well.

Although students with high-incidence disabilities and proficient writers shared an empathetic idea generation process, proficient writers were able to go into more depth than students with high-incidence disabilities when imagining themselves in a new situation or considering the point of view of others. For example, Drew, a student with a high-incidence disability expressed his viewpoint for why teachers should take their class on field trips by empathizing with other students by stating, “because the kids like get a chance to get out of school for a day. It’s a different form of learning that could be more beneficial... and technically gives them a chance to see the real world and more hands-on ideas.” Julie, a proficient writer, expressed empathetic concerns to a greater extent and with more depth. She noted, “kids might have certain dietary needs, such as diabetes or eating disorders, have been increasing greatly over the past years.” She went on to describe another scenario in which a student might be hungry. This time, however, she noted a potential effect, such as academic decline to appeal to teachers. For example, she mentioned, “when kids get hungry, they can’t focus as well. To illustrate, a student may be taking a math test ...but he can only think about how hungry he is. This results in him getting a bad test grade.” It is evident that while students with high-incidence disabilities

and proficient writers both generate ideas by considering the perspectives of others, proficient writers can do this more substantially and in more depth. Appendix U provides a transcript of the think aloud protocol for a student with a high-incidence disability and a proficient writer, which offers additional insight to the shared idea generation process of considering the perspectives of others, yet the differences in depth.

These differences in “depth” are also highlighted by Bereiter and Scardamalia (1987; see Chapter 1) where proficient or “expert” writers usually adopt a strategy called knowledge transforming (pp. 349–363) by “problematizing” a writing task, and therefore, developing elaborate content and rhetorical goals requiring sophisticated problem-solving. Conversely, novice writers, or students with high-incidence disabilities, often take a simpler or knowledge-telling approach by generating content with one idea prompting the next.

The TBGO offers a variety of video models pertinent to parts of the writing process. One of these video models focuses on brainstorming strategies. This video model offers six different ways in which students can brainstorm, including visualize images, search images, draw a picture, make a list, make a web, and talk about it. This video concludes by offering a strategy for students who may have difficulty generating ideas based on if they are for or against the writing prompt. The video encourages students to “write through a mask...and when wearing that mask, they may pretend to someone else who can take a side and has a certain opinion.” This feature of the TBGO may have been an idea generation catalyst for students with high-incidence disabilities for considering the perspectives of others. However, according to the TBGO usage data,

both students with high-incidence disabilities and proficient writers largely neglected these video models.

### ***Multiple Strategies***

During all three writing contexts (“pretest,” “posttest with the TBGO” and “posttest without the TBGO”) proficient writers engaged in multiple idea generation processes, whereas only during “posttest with the TBGO” did students with high-incidence disabilities engage in multiple idea generation processes. The use of multiple idea generation processes was maintained for proficient writers as they composed an essay without the use of the TBGO during “posttest without the TBGO,” however, students with high-incidence disabilities did not maintain the use of multiple idea generation processes when the TBGO was removed. As mentioned previously, it is plausible that the TBGO prompted students with high-incidence disabilities and proficient writers to take more time to plan and think, therefore, paving the way for more than one idea generation process.

Previous research does not necessarily capture the idea generation strategies for students with high-incidence disabilities or proficient writers. However, the synergy of cognitive processes required for proficient writing, including the parameters required for specific genres (Dobbs, 2014), self-regulation skills (Graham et al., 2017a), and cognitive demands (Perin, 2013), is well known. The results of this study indicate that proficient writers adequately met the demands of the writing process, as they generated ideas using multiple idea generation processes independent of scaffolds and supports (e.g., TBGO). Additionally, it is plausible that when students with high-incidence disabilities used the

TBGO some of that cognitive demand was alleviated, therefore “freeing” them to use multiple strategies for generating ideas, thus being more strategic. This notion was further illuminated during “posttest without the TBGO” as students with high-incidence disabilities did not engage in multiple idea generation processes. When the TBGO was removed, students with high-incidence disabilities may have experienced greater cognitive demands, and therefore, were unable to use multiple idea generation processes.

### **Unique Idea Generation Processes for Students with High-Incidence Disabilities**

Students with high-incidence disabilities and proficient writers exhibited similar idea generation processes across writing contexts, such as (a) referencing personal experiences, and (b) by considering the perspectives of others, along with the employment of multiple idea generation processes. However, students with high-incidence disabilities also exhibited unique idea generation processes while constructing a written response to an opinion-based persuasive writing prompt. These unique idea generation themes for students with high-incidence disabilities included (a) referring to the prompt, and (b) exhibiting idleness. The subsequent sections will describe these unique idea generation themes for students with high-incidence disabilities and across writing contexts (“pretest,” “posttest with the TBGO,” and “posttest without the TBGO”).

#### ***Referring to the Prompt***

During “pretest” only, some students with high-incidence disabilities resorted to referencing the prompt to generate ideas. As such, these students would simply refer to the prompt and generate an idea based on their opinion of the prompt. Simply stated, during “pretest” students with high-incidence disabilities would refer to the words in the

prompt either verbatim (e.g., “ten-year-olds should stay home by themselves”) or by inserting their opinion in conjunction with the prompt (e.g., “yeah, I think ten-year-olds should not be able to stay home by themselves”). Additionally, this reference to the prompt appeared to be more of a catalyst to assert an opinion, rather than probing long-term memory for an idea. While this appears to be a rudimentary idea generation process, it seemingly involves more intentionality and a more sophisticated process for generating ideas than simply exhibiting idleness. These students with high-incidence disabilities may have used this strategy because they did not have a physical tool or scaffold (e.g., a graphic organizer) present or one readily available to retrieve from memory (e.g., a mnemonic). This “shallow” way students with high-incidence disabilities generated ideas is consistent with previous literature (e.g., Graham et al., 2017a; Wilson, 2017), demonstrating this lack of knowledge of genre specific elements and vocabulary, the inclusion of scant related and significant content, poor adherence to a centralized topic or prompt, and summarization. While the field has developed interventions centered on the organization of ideas or the organization of ideas relating to genre elements (e.g., SRSD, mnemonics, technology-based graphic organizers), the findings of this study indicate that students with high-incidence disabilities may require explicit instruction involving how to probe their long-term memory for relevant and significant ideas that support an asserted opinion. For example, this may include offering strategies specific to idea generation, such as scaffolds or cognitive cue cards.

### *Exhibiting Idleness*

While students with high-incidence disabilities were able to harvest ideas based on personal experiences throughout all three writing contexts (“pretest,” “posttest with the TBGO,” and “posttest without the TBGO”), they also continued to not know how to generate ideas (exhibited idleness) or were without an awareness of where or how ideas were formulated, throughout all three writing contexts. This theme illustrated the seeming inactivity of idea generation during the think aloud protocol. That said, the use of the TBGO helped to transition students away from exhibiting idleness and towards other idea generation processes. In sum, during “pretest” five students with high-incidence disabilities (63%) exhibited idleness in idea generation; however, with the use of the TBGO (“posttest with the TBGO”) only three students (35%) exhibited idleness and once the TBGO was removed (“posttest without the TBGO”), only one student (13%) continued to exhibit idleness when generating ideas.

This reduction of the occurrence of students with high-incidence disabilities approaching an opinion-based writing prompt with idleness of idea generation is meaningful. The use of the TBGO provided an avenue for students with high-incidence disabilities to learn new approaches to generate ideas. As a result, while the use of the TBGO was a catalyst for students with high-incidence disabilities to generate ideas, it was still not enough, as these students with high-incidence disabilities continued to not verbalize any ideas during the think aloud. It is also noteworthy that, although students with high-incidence disabilities exhibited idleness, this may have been because of a lack of verbalization of ideas rather than a lack of sophisticated idea generation processes.

The researcher found differences in writing outcomes for students with high-incidence disabilities and proficient writers within the literature (e.g., Graham et al., 2017a; Graham et al., 2018; Wilson, 2017). It is well documented that many writers, especially those with high-incidence disabilities, experience difficulty generating ideas (Graham et al., 2017a; Kauffman & Landrum, 2018).

### **Unique Idea Generation Processes for Proficient Writers**

While students with high-incidence disabilities and proficient writers shared similar idea generation processes (referencing personal experiences, considering the perspectives of others, and multiple processes), proficient writers also exhibited unique idea generation processes while constructing a written response to an opinion-based persuasive writing prompt. These unique idea generation processes for proficient writers included (a) employing strategy use, (b) using organizational structures, and (c) pausing to think. The subsequent sections will describe these unique idea generation processes for students with high-incidence disabilities and across writing contexts (“pretest,” “posttest with the TBGO,” and “posttest without the TBGO”).

#### ***Employing Strategy Use***

Proficient writers engaged in a strategic idea generation process during “pretest.” In particular, proficient writers would employ a brainstorming strategy or refer to a planning strategy that they were formerly taught. Graham and colleagues (2015) characterized the complex array of writing skills into the subskills of planning, idea generation, revising, and editing, which are notably different for students with high-incidence disabilities compared to their peers (Graham et al., 2017a). While proficient

writers generated ideas by employing strategy use during “pretest,” this seemed to shift during “posttest with the TBGO” and “posttest without the TBGO” to generating ideas using organizational supports. This may have been because proficient writers are trained to recognize appropriate planning strategies, particularly the generation of relevant and salient ideas, given the individual writing task and audience, with consideration of their own personal planning styles and preferences (Breuer, 2019; Hauth et al., 2013).

However, after using the TBGO, these proficient writers may have relied more so on strategies related to the organizational demands of writing (“posttest with the TBGO,” “posttest without the TBGO”) for generating ideas rather than from strategies that they were previously trained on (e.g., brain dumps, “four-square”) or preferences (e.g., rereading).

### ***Using Organizational Supports***

Generating ideas using organizational supports meant generating ideas through the consideration of the organizational parameters of the persuasive genre, through those imposed due to the structural nature of the TBGO (e.g., Determine Three Reasons), or based on what students had recalled being taught during instructional lessons. Proficient writers generated ideas by employing strategy use during “pretest,” however, this seemed to shift during “posttest with the TBGO ” and “posttest without the TBGO” to generating ideas using organizational supports. This shift may have been because during “pretest” students may not have had the organizational structures in place to lean on, as they were asked to respond to an opinion-based persuasive writing prompt using a blank Google Doc. However, during “posttest with the TBGO” students were able to use the physical

structures of the graphic organizer to produce ideas, and it is likely that the parameters of these physical structures transferred to the “posttest without the TBGO.”

Proficient writers were recently exposed to a “four-square” strategy that prepared them for their end of the year state assessment. Several students reported this strategy of an introductory paragraph (first square), two paragraphs – one for each reason (second and third squares), and a concluding paragraph (fourth square). One student in particular, Julie, toggled back and forth between the two organizational structures and noted, “Okay, so now I need three reasons, so I usually do two, but I am just going to do three.” When proficient writers encountered the organizational structures of the TBGO and/or the learned structures of the four-square strategy, they adhered to the structure, which sometimes required them to include more ideas or reasons than they would have otherwise. It is plausible that because proficient writers already possessed an understanding of the demands of the genre, they were able to move more freely from knowledge-telling to knowledge transforming, elaborating on content (Bereiter & Scardamalia, 1987; see Chapter 2).

Another notable finding was that proficient writers continually reread their compositions. Often, this would spark additional ideas, as proficient writers would explicitly proclaim, “I am going to go back through and reread to make sure it makes sense.” During this time, proficient writers would edit for mechanical errors, but they would also revise for readability, particularly around the organization of ideas and the intent that idea was portraying. For example, after writing her second paragraph on her

first idea/reason, Soraya realized that her two ideas sounded too similar, and therefore, wanted to change her second reason. She stated:

So, my second support for the thesis statement was because they might not know how best to take care of themselves. So, now that I'm looking back at this, I feel like it sort of fits with my first support, so I might have to change that. Because maturity was very broad and I summed it up more specific details in my first paragraph. Now that I am starting the second paragraph, I need like a totally separate idea from maturity.

The process that Soraya engaged in reflects the four major processes that Hayes and Flower (1980) described as a complex system of problem solving that expert writers engage in during the writing process (see Chapter 1). As such, Soraya's think aloud revealed that she had (a) come up with ideas and arranged them logically in her head, (b) she produced written text that translated her ideas, (c) she reviewed her ideas through proofreading and revised her errors, and (d) she monitored her metacognitive processes or planning, translating, and reviewing. In brief, proficient writers were not only strategic when generating ideas, but they also engaged in a synergy of complex writing processes that often involved considerations for translating, reviewing, and monitoring.

### ***Pausing to Think***

One way in which proficient writers were more strategic than students with high-incidence disabilities was that they allowed time for strategic considerations, including the generation and organization of ideas. Whereas students with high-incidence disabilities would simply state, "I don't know" or shrug their shoulders, proficient writers

expressed taking time to think of ideas, such as “let me think about this for a second.” Further, it appeared as though when students with high-incidence disabilities would become “stuck” or unable to produce ideas, they would more quickly “sign off,” or stop writing, whereas proficient writers would allow more time to think of ideas. While the time spent writing was not necessarily captured as a writing outcome for this study, it was evident through the think aloud that proficient writers observed more time generating and organizing their ideas. For example, while Joseph, a proficient writer, muttered, “I just went blank,” he persisted through the writing process and stated, “hold on, I am trying to think.” Again, this contrasted from students with high-incidence disabilities who would simply note, “I am drawing a blank” and discontinue writing.

However, it is important to note that this theme only appeared for proficient writers during the “posttest with the TBGO.” This may have been due to the features of the graphic organizers that prompted the students to complete a predetermined number of “cells” (e.g., Determine 3 Reasons, Explain Why or Say More), thus taking more time. Previous research indicates that while planning can be a particularly challenging task, especially for students with high-incidence disabilities, writers who engage in planning activities typically produce higher quality written products (Evmenova et al., 2016; Geres-Smith et al., 2019; Graham et al., 2005). While no students in either group were observed planning for their essays in any of the writing contexts (“pretest,” “posttest with the TBGO,” and “posttest without the TBGO”), it is the researcher’s belief that this additional time taken by proficient writers was for planning purposes. This “in the head” planning for proficient writers is consistent in previous research (Mason et al., 2011),

whereas previous research also demonstrates that students with high-incidence disabilities typically do not engage in any or in minimal planning (Hauth et al., 2013).

The findings of this dissertation mirror those in the literature, as it was evident that proficient writers were more strategic in generating ideas (e.g., employing strategy use, pausing to think) than proficient writers (e.g., exhibiting idleness, referring to the prompt). More specifically, across writing environments, proficient writers generated ideas through organizational parameters, and by allowing time to “think,” whereas students with high-incidence disabilities appeared less strategic by not employing a particular idea generation process (e.g., exhibiting idleness) or through a more rudimentary process, such as merely restating the prompt. These strategic actions that proficient writers employ are consistent with cognitive models of writing that characterize writing as a problem-solving skill (McCutchen et al., 2008). Using a think aloud, the findings of this dissertation shone light on the strategic, or problem-solving differences within the writing process, including idea generation, for these students with high-incidence disabilities and proficient writers.

### **Quantitative Writing Outcomes for Students with High-Incidence Disabilities**

Three writing outcomes were measured during this study – total number of ideas generated, total number of written words, and writing quality. There was a statistically significant difference between all three of these writing outcomes from “pretest” to “posttest with the TBGO” and from “pretest” to “posttest without the TBGO.” While previous research often examines the quality of written ideas (e.g., Crossley et al., 2016), this study focused on the quantity of ideas. An idea was defined as a complete or

fragmented sentence which suggests or takes on an aim or purpose. Because the use of the TBGO decreased the number of students with high-incidence disabilities who exhibited idleness of idea generation, it is sensible that the number of ideas would increase with the use of the TBGO. It is unsurprising, therefore, that qualitative findings suggested that as students used the TBGO they acquired more idea generation processes, thus increasing the number of ideas generated. Even when the TBGO was removed (e.g., “posttest without the TBGO”), students still maintained a statistically significant difference in the total number of ideas from “pretest” to “posttest without the TBGO,” suggesting that students with high-incidence disabilities can maintain idea generation processes once scaffolds are removed. Additionally, the instructional lessons provided by the intervenor, especially Lesson 3 and Lesson 4, which modeled writing could have contributed to writing outcomes between “pretest” to “posttest with the TBGO” and “posttest without the TBGO.”

Students with high-incidence disabilities also demonstrated a statistically significant difference in the total number of written words from “pretest” to “posttest with the TBGO” and from “pretest” to “posttest without the TBGO.” This finding is consistent with previous research using the TBGO (e.g., Evmenova et al., 2016; Hughes et al., 2019). The organizational structure of the TBGO likely required students to generate more text than they would have without the TBGO, thus producing more total written words. As mentioned previously, because the use of the TBGO increased the total number of ideas, it follows that the total number of written words would also increase.

Results of this study indicate a connection between the total number of written words and the total number of ideas generated.

Lastly, students with high-incidence disabilities demonstrated a statistically significant difference in writing quality from “pretest” to “posttest with the TBGO” and from “pretest” to “posttest without the TBGO.” This finding is also consistent with previous research using the TBGO (Evmenova et al., 2016; Regan et al., 2018). Because students with high-incidence disabilities produced such little text (e.g., an average of 45.88 total written words at “pretest) with such poor quality (e.g., an average of 2.50 for writing quality), it is likely that there was a floor effect after the implementation of the TBGO and instructional lessons centered on the genre of persuasive writing.

As such, because students with high-incidence disabilities received instruction on the genre of persuasive writing and its accompanying genre elements (i.e., identify your opinion, determine three reasons, explain why or say more, add transition words summarize), it is sensible that these students would increase the writing quality included in their essay. What is less known is if the TBGO itself or the instruction contributed to this increased application of writing quality, especially since there was also a statistically significant difference in writing quality from “pretest” to “posttest without the TBGO.” To date, only one study (Crossley et al., 2016) was found that demonstrated a strong link between essay quality and features related to idea generation. The findings of this study contribute to the literature by providing a link between essay quality (i.e., the number of persuasive elements) and the number of ideas generated.

## **Quantitative Writing Outcomes for Proficient Writers**

Proficient writers were also assessed on three writing outcomes – total number of ideas generated, total number of written words, and writing quality. For proficient writers there was a statistically significant difference in the number of ideas from “pretest” to “posttest with the TBGO” but not from “pretest” to “posttest without the TBGO.” Because proficient writers already possessed a plethora of idea generation processes, as evidenced by the themes that emerged, it is likely that there was a ceiling effect. That said, proficient writers still benefited from the use of the TBGO as a vehicle for increasing the total number of ideas generated.

There were no statistically significant differences in the total number of written words from “pretest” to “posttest with the TBGO” and from “pretest” to “posttest without the TBGO” for proficient writers. As previously stated, it is likely that there was a ceiling effect for this writing outcome as well. What is noteworthy is that the statistically significant difference in the number of ideas for students with high-incidence disabilities likely had an impact on the statistically significant total number of words. With proficient writers there was a statistically significant difference in the number of ideas from “pretest” to “posttest with the TBGO,” however, this was not directly connected to the total number of written words. This finding was also reflected in Crossley and colleagues’ work (2016) in which the quantity of ideas produced by students did not uniquely contribute to the prediction of essay quality after adjusting for the influence of persuasive knowledge and disability status.

There was a statistically significant difference in writing quality “pretest” to “posttest with the TBGO” and from “pretest” to “posttest without the TBGO” for proficient writers. The measure for assessing this outcome was based on a 10-point rubric, two points for each persuasive element. Proficient writers already came up with a well-instilled organizational strategy for writing (four-square), which did not include transition words and only included two reasons instead of the prescribed three reasons. As such, when proficient writers were exposed to the TBGO, which offered transition words and an additional reason, proficient writers were able to build upon their previously acquired strategies. Additionally, because there was a statistically significant difference in writing quality from “pretest” to “posttest without the TBGO,” there is evidence that the writing strategies gained through using the TBGO were maintained when the TBGO was removed (“posttest without the TBGO”).

This finding echoes that of Regan and colleagues (2017) and demonstrates that when using a computer-based graphic organizer (an iteration of the TBGO) students with and without high-incidence disabilities increased the number of sentences, quality, and transition word. However, students with high-incidence disabilities demonstrated more improvement in writing quality than students without disabilities, suggesting that students without high-incidence disabilities possessed a greater degree of knowledge of sentence structure and essay writing. Regan’s study also inquired about writing outcomes when the CBGO was removed. Findings of this study demonstrated that while students with and without high-incidence disabilities were able to recall the IDEAS mnemonic, performance on all writing outcomes decreased. This was especially evident for students

with high-incidence disabilities. The outcomes of this dissertation study reiterate the findings from Regan and colleagues (2017) and are also consistent with the literature indicating that students with learning difficulties typically struggle to transfer learning (Fuchs & Fuchs, 2015).

Lastly, a similar study conducted by Regan and colleagues (2018) examined the effects of a mobile-based graphic organizer (MBGO), which is an iteration of the TBGO for students in inclusive classrooms. While Regan’s study featured a quasi-experimental design, the results express similarities to this mixed methods study. While the students in the experimental group significantly outperformed students in the control group for number of transition words and writing quality, there was not a statistically significant difference in the number of sentences or words between both groups. Regan and colleagues (2018) hypothesized that this may have been because students who used the MBGO stayed within the limits of the organizer and thus may have stifled the length of their writing. Similarly, in the present study, proficient writers demonstrated a significant difference in the number of writing quality (persuasive elements) between “pretest” and “posttest with the TBGO,” demonstrating that, while these students are still considered to be “proficient,” they still benefit from the use of the TBGO.

### **Implications for Practice**

The findings of this study revealed several educational implications worth considering. First, students with high-incidence disabilities and proficient writers differed in their idea generation processes. The use of the think alouds, which made these processes visible has the potential to increase the idea generation acumen for both

proficient writers and those with high-incidence disabilities by enhancing their knowledge transforming ability and, ultimately, increasing the writing outcomes for these students. Specifically, by identifying that proficient writers generate ideas by referencing personal experiences, considering the perspectives of others, pausing to think, employing strategy use, and using multiple strategies could provide teachers with an avenue for strategy instruction and modeling based on the unveiled thought processes of the proficient writers. Additionally, this unveiling can potentially answer the question of which procedures have been effective for middle school proficient writers and for those with high-incidence disabilities.

Second, there are broadly two well-documented approaches to the planning process: a top-down approach (e.g., planning in advance via outlines, graphic organizers, etc.) and a bottom-up approach (e.g., discovery and spontaneity of concepts/ideas as one writes freely but with extensive revisions; Alamargot & Chanquoy, 2001; Deane et al., 2008). Such processes may present differently for students with high-incidence disabilities and proficient writers. Previous research does assert that students with high-incidence disabilities generally lack a strategic plan for writing (Graham et al., 2013), including planning, writing, organizing, and revising ideas (Koutsoftas, 2016). The results of this study demonstrated that students with high-incidence disabilities and proficient writers lacked processes for planning, but this was more apparent for students with high-incidence disabilities. Teachers may consider explicitly teaching and modeling these planning approaches while considering the idea generation practices that were gleaned from this study. Furthermore, students must be trained to recognize appropriate

planning strategies given the individual writing task, with consideration of their own personal planning styles and preferences. In sum, teachers can provide explicit instruction on planning processes while simultaneously modeling idea generation processes and strategies.

Next, because students with high-incidence disabilities benefit from explicit instruction centered on planning (e.g., Evmenova et al., 2016), teachers and students alike would benefit from this instructional approach. This instruction would help to “free up” cognitive space for students with high-incidence disabilities (Bereiter & Scardamalia, 1987), thus allowing for more cognitive focus on the generation and elaboration of ideas.

Lastly, the writing process is often recursive, especially as writers discover new ideas as they write. Evidence of planning throughout the entire writing process was apparent for proficient writers, as they often took time to produce ideas; yet this practice was absent for students with high-incidence disabilities. As a result, teachers may consider explaining to students that idea generation not only occurs at the planning stage of the writing process, but rather is ongoing. Considering the work of Crossley and colleagues (2016) and their findings that elaboration and the originality of ideas were significant contributors to essay quality, educators may consider centering instruction on how students, especially students with high-incidence disabilities may revise essays for elaboration and originality throughout the writing process. The TBGO, in particular, includes a content video model on “explain why and say more,” which may help encourage students to further elaborate or “explain why” when proposing ideas.

Educators may consider how urging students, especially those with high-incidence disabilities to “explain why or say more” on their ideas may bolster writing quality.

### **Limitations to the Study**

There were several limitations to this study. First, the demographics of the two students is a stark limitation. The demographic data of the participants is largely representative of larger systemic issues, such as the overrepresentation of students of color in special education (Cavendish et al., 2020). Consequently, it is sensible that the comparison of the two groups (students with high-incidence disabilities and proficient writers) possessed differences beyond exceptionalities and writing differences. Also, although differentiation is an appropriate instructional practice (Bender, 2012), students with high-incidence disabilities and proficient writers received differentiated instruction throughout the duration of this study. For example, based on performance data for students with high-incidence disabilities, the instructional focus for the persuasive writing lessons centered around constructing a well-organized, five to eight sentence persuasive essay. However, based on the writing performance of proficient writers, the persuasive writing instructional lessons centered around crafting a well-organized, four to five paragraph persuasive essay. For example, the organizational structure of the TBGO is designed to aid students in writing a well-organized five to eight sentence essay or a five-paragraph essay. Thus, the instruction that students with high-incidence disabilities received was focused on constructing a five to eight sentence essay, whereas the instructor for the proficient writers centered on crafting a five-paragraph essay. These differences in instruction may have impacted the idea generation processes and/or writing

outcomes of either group. Additionally, while the TBGO offers nine instructional videos centered on specific areas of the writing process (see Chapter 3), these built-in features were largely not used by the students. Although these features were explicitly modeled during the instructional lessons (see Chapter 3), during independent writing sessions and during “posttest with the TBGO” and “posttest without the TBGO,” students did not use these features.

The role of the researcher as an intervener was another limitation to this study. As such, the intervenor was not a known staff member, which may have impacted the think alouds and writing outcomes of both groups of students. Students in both groups may have felt uncomfortable performing academic tasks with the intervenor, and therefore, their written compositions and think alouds may not have been an authentic reflection of their ability. Additionally, the researcher provided persuasive writing instruction to students with high-incidence disabilities and proficient writers that may have differed slightly from their typical classroom instruction. For example, proficient writers were learning a “four-square” strategy for constructing an essay. One square contained an introduction paragraph, including a thesis statement, two of the squares contained a paragraph for each reason, including details, and a final square contained a concluding paragraph. Although this “four-square” strategy aligns with the persuasive writing instruction that was delivered during this study there were slight differences. For example, while the instruction for this study included a topic sentence, it did not explicitly address a thesis statement. Furthermore, the “four-square” method alluded to one paragraph for each of the two reasons, whereas the structure of the TBGO suggests

one paragraph for three reasons. As a result, on occasion, proficient writers would request to construct an essay with two reasons instead of three.

Another limitation to this study was the setting. The persuasive writing instruction and orientation to and use of the TBGO took place during both groups' "resource" block. This is an 80-minute block that provides students with opportunities to read, complete homework, study, etc. Thus, it is similar to a study hall period. As such, there were instances when students would suggest "hurrying up" to finish an essay or think aloud so they could visit with another teacher or complete homework. Consequently, the think alouds and the written constructions may have been done in haste, rather than a true reflection of student aptitude.

The choice of writing prompts may have been a limitation to this study for a few reasons. First, although the writing prompts used in this study were validated (see Evmenova et al., 2019), and because the findings demonstrated that students in both groups largely relied on personal experiences for determining reasons, it is possible that the choice of two prompts may not have yielded any personal experiences for students. Therefore, the think aloud data and the writing outcome data may have been negatively impacted. Further, some of the prompts presented were limited in cultural/gender relevance and responsiveness. For example, Soraya, a proficient writer, who identified as Muslim was hesitant to write about her religious perspectives during "pretest." The prompt asked students' opinions on whether or not they believed schools should be separate for boys and girls. Soraya verbalized to the intervenor how, "that would be much easier because I wouldn't have to cover my hair," yet, while it appeared that she had a

personal connection to this prompt, she chose to write about the other option (do you believe 10-year-old kids should be able to stay home by themselves). When the intervenor asked why she chose the alternative prompt, she explained, “well, it would just be weird to write about the other one.” As such, because Soraya may have felt uncomfortable responding to a prompt about separate schools for boys and girls, the alternative prompt may not have elicited as quality of a response, therefore, negatively impacting writing outcomes. Consequently, another limitation to the writing prompts is the fact that the themes or conclusion may have been largely based on the prompt. For instance, a writing prompt centered on separate schools for boys and girls might have elicited a deep personal response for one student that may have hindered her ability to consider an empathetic response. In this way, certain prompts may have inhibited additional themes.

This study contained a small sample size. The intention of this study was not generalization and the sample size for each group was appropriate given the methodological design (Yin, 2015); however, the non-normally distributed sample sizes for each group may have impacted the emerging themes and the statistical analysis of writing outcomes. Additionally, while qualitative research does not necessitate the replication of these findings (Dey, 2003), “the best we can do is explain how we arrived at our results” (p. 251). Thus, while this mixed methods study provided methodological transparency, the results of this study may not demonstrate replicability.

Lastly, another limitation to this study is the think alouds themselves. Although the use of a think aloud is an effective approach for gathering insight to thought processes

(e.g., Bai, 2018; Shanahan & Shanahan, 2012), students with high-incidence disabilities who struggle with language skills, may have had more sophisticated idea generation processes than they were unable to articulate. Because students with high-incidence disabilities largely experience characteristics of language difficulties (Gage et al., 2012), it is unsurprising that this group of students would likely be less expressive during a think aloud. Similarly, the cognitive demands of the writing process have been well-documented (e.g., De La Paz, 2007). Poor language skills characterized by students with high-incidence disabilities, coupled with the cognitive demands of the writing process may have evoked challenges for this population that were not otherwise experienced by the proficient writers. Thus, the appropriateness of the think aloud for students with high-incidence disabilities may require further scrutinization.

Relatedly, the use of the think alouds may have themselves been an idea generation strategy. Verbalizing thought processes while writing could likely be a strategy for generating and revising text. The use of the think aloud as a potential idea generation strategy may have inherently benefitted proficient writers more than students with high-incidence disability due to cognitive constraints (Balta, 2018), therefore, offering the proficient writers an advantage over the students with high-incidence disabilities.

### **Implications for Research**

While think alouds are an effective avenue for researchers to gain insight into modes of thinking, research surrounding the use of think alouds for understanding writing processes is scant. As such, future research may consider the use of think alouds to “see”

additional writing processes for students. For instance, future research may consider “viewing” particular brainstorming processes for students. Research could seek to investigate the brainstorming experiences for students and how such experiences contribute to the generation of ideas. Such insight could shine additional light on how students generate and develop ideas.

Historically, writing outcomes have been primarily measured quantitatively (Mason et al., 2013). However, future research may contemplate how to analyze writing outcomes through the use of think alouds or other creative outlets. This strategic consideration for evaluating writing outcomes outside of typical numeric outcome measures may result in valuable data. Particularly, the use of mixed methods research has the potential to yield significantly enhanced results than from a single method alone (Collins et al., 2006). Additionally, such findings could offer support for the inclusion of idea generation as a component of cognitive writing models as well as contribute a better understanding to what MacArthur and Graham (2016) considered an “in the head” phenomena by making them visible. Future research may consider if there is a correlation between particular idea generation processes and enhanced writing outcomes. For example, an analysis may be conducted to demonstrate if one idea generation process or which combination of idea generation processes yield the most effective writing outcomes.

While the sample size for this study was relatively small, future research may consider a larger replication that may expand on the topic or contribute to additional findings. Future research may also consider disaggregating students who qualify for

special education services under different disability categories. Additionally, researchers may investigate or compare the idea generation processes for younger (elementary) and older (high school) students. And, while the majority of inclusive education research efforts predominately center on ability differences (e.g., differences in writing outcomes for student with high-incidence disabilities compared to their typical peers), the overlooked intersections of race, language, and exceptionalities (Gonzales et al., 2017) remains present. Therefore, it would be advantageous for future research to not only consider differences in outcomes for students with disabilities compared to their typical peers, but to also consider the educational opportunities (or lack thereof) for students with intersectional identities, particularly students of color with exceptionalities.

Lastly, future research could consider developing an intervention specific to idea generation. To date, there is no study that examines the effectiveness of an intervention that is purposefully designed to support students in idea generation (see Chapter 2). Results from such a study could illuminate how interventions can effectively support students' idea generation processes.

## **Conclusions**

The purpose of this study was to compare the idea generation processes for students with high-incidence disabilities and proficient writers. The findings of this study demonstrate that proficient writers engage in multiple idea generation processes independent of writing supports and scaffolds (e.g., the TBGO), whereas students with high-incidence disabilities are seemingly unaware or exhibiting idleness of the idea processes they have used or how to generate ideas independently. The use of the TBGO,

a validated writing support (Boykin et al., 2019; Brady et al., 2021; Evmenova et al., 2020; Regan et al., 2021), was an effective tool for aiding students with high-incidence disabilities in generating ideas.

While students with high-incidence disabilities and proficient writers differed in idea generation processes, there were also similarities in idea generation processes. Both groups generated ideas based on personal experiences in all three writing contexts. With the use of the TBGO, students with high-incidence disabilities and proficient writers were able to share in idea generation processes, such as drawing on empathy and using multiple idea generation processes. Additional findings revealed that the use of TBGO had a statistically significant impact on all writing outcome measures, including the number of ideas, the total number of written words, and writing quality for students with high-incidence disabilities. Statistically significant impacts of the TBGO were less common for proficient writers, as significant differences were only found in the number of ideas generated between “pretest” to “posttest with the TBGO” and in writing quality between “pretest” to “posttest with the TBGO” and between “pretest” to “posttest without the TBGO.”

Findings demonstrate, the use of the TBGO provided a greater impact on students with high-incidence disabilities' idea generation processes and writing outcomes. However, the data also indicate that students with high-incidence disabilities require more scaffolds centered on idea generation. While the TBGO contains scaffolds, it is evident that these scaffolds are not sufficient for helping this group of students generate ideas. Teachers of writing are encouraged to emphasize planning and brainstorming

strategies that explicitly focus on idea generation. Overall, the findings of this study can provide novel and beneficial writing practices for practitioners, students with high-incidence disabilities, and proficient writers, particularly in the area of idea generation. Practitioners can use the idea generation processes gleaned from this study to provide students in their classrooms with avenues for generating ideas. For example, as practitioners model skilled writing for students they can emphasize the idea generation processes identified from proficient writers, such as referencing personal experiences, considering the perspectives of others, employing strategy use, using organizational strategies, and pausing to think. Teachers of writing may consider a conglomeration of the aforementioned idea generation processes differentiated to meet the needs of the students. Additionally, teachers of writing may find these particular idea generation processes beneficial for struggling writers. Lastly, practitioners and researchers alike can consider ways to generate memory strategies, such as mnemonics to help offer students with tools for recalling idea generation processes while engaging in the writing process.

## Appendix A

### Parent Consent



**George Mason University**  
(703) 993-5256; FAX: (703) 993-3681  
Email: [aevmenov@gmu.edu](mailto:aevmenov@gmu.edu)

### **Parent Permission for Participation in Research: Informed Consent**

**Project Title: WEGO-RIITE: Writing Efficiently with Graphic Organizers –  
Responsive Instruction while Implementing Technology Effectively (84.327S)**

**Purpose:** This study is being conducted to investigate the effectiveness of technology-based graphic organizers on the essay writing and writing fluency performance of students struggling with writing.

**Project Requirements:** Your child's teacher may or may not be using some new methods to teach writing essays during language arts, science, and social studies classes. The university researchers developed these methods based on the best practices from research. We would like to compare students' performance in the class that uses new methods to those who are taught in a regular way. Your child's teacher may or may not receive training in the writing strategy instruction. As a result, your child may receive this new instruction or continue to receive their usual writing instruction. This will allow us to evaluate the effects of this strategy instruction.

The project covers the regular classroom curriculum that targets improving written expression. Your child's teacher will be trained to teach the writing strategy and test your child's writing performance. These tests will include test scores from their essays written in class, and test scores from writing tests, including Writing Fluency, a subtest under Broad Written Language of the *Woodcock Johnson Achievement Battery*.

We will be watching and videotaping some of your child's writing tasks this year. We would like permission to include your child in these videotapes. We are studying how teachers implement and how students use technology during writing. We would also like to ask your child some questions about using technology for writing and audio record their responses. These questions will take only a few minutes of your child's time and will not interfere with any other classroom activities. We would like to give your child writing opportunities with technology to evaluate how well the writing instruction impacts their performance.

We would also like to look at some of your child's school records. This includes test scores from existing school records of standardized tests, including SOL achievement scores, as well as IEP writing goals (if applicable). Any information collected, including videotapes, audiotapes, and test scores, will be kept confidential by maintaining all materials in locked files and offices accessible only to project staff, and viewed only by project staff. Once the information is collected, student numbers will be assigned, and identifying information will be discarded. The video recordings will be erased 5 years after the project's conclusion. An assent form was distributed to your child. At that time, the information contained in this letter and their assent form was described and any questions were answered. Students were encouraged to take their forms home and discuss the project with you before signing them and returning them to a designated place in the school. If you choose not to participate in the study, your child will complete scheduled classroom activities while other students participate in the research procedures.



**IRB: For Official Use Only**

Project Number: 1338081-4  
Date Approved: 9/10/2021  
Approval Expiration Date: 9/9/2022

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**Foreseeable Risks:** There are no foreseeable risks or discomforts.

**Voluntary:** You and your child's participation is voluntary, and you and your child may withdraw from the study at any time, even after signing the consent and assent forms, for any reason. There is no penalty for not participating or withdrawing.

**Benefits:** The personal benefits for participation may include improved written expression performance. **Costs:** There are no costs to you, your child, or their teachers.

**Confidentiality:** All data collected in this study will be confidential; all person-identifiable data will be coded so that no one, including individual students, parents, teachers, schools, or districts can be identified. Identifiers may be removed from the data and the de-identified data could be used for future research without additional consent from participants. While it is understood that no computer transmission can be perfectly secure, reasonable efforts will be made to protect the confidentiality of your transmission.

**Researchers:** This study is being conducted by Dr. Anna Evmenova, Dr. Kelley Regan, Dr. Amy Hutchison, and the team of doctoral students from College of Education and Human Development at George Mason University (GMU). You can reach them at telephone number: 703-993-3670 for questions or complaints.

You may also contact the GMU Institutional Review Board (IRB) Office at 703-993-4121 if you have questions or comments regarding your rights as a participant in this research. This project has been reviewed according to George Mason University procedures governing your participation in this research (IRBNet number: 1338081-1).

If you agree to the information described above and will allow your child to participate in the research, please print your child's first and last name below and sign both copies of the parental consent forms provided. Then, please return one signed copy to your child's teacher **within 10 days of receiving the information about the research.**

I have read this form and agree for my child to participate in the study:

{Agree or do NOT agree to participate in the study}

I consent to the video recording of the instruction that my child will receive as well as his/her audio-recorded interviews. I understand that any video/audio recordings will be kept confidential:

{Agree or do NOT agree to video/audio recording}

{Child's Name}

{Parent Signature}

{Date of Signature}



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## Appendix B

### Student Assent



**George Mason University**  
(703) 993-5256; FAX: (703) 993-3681  
Email: [aevmenov@gmu.edu](mailto:aevmenov@gmu.edu)

### **Student Permission for Participation in Research: Assent Form**

Project Title: **Graphic Organizers for Writing Instruction**

#### **RESEARCH PROCEDURES**

This study is to find out if computers help students write better papers. Your teacher may be using technology-based graphic organizers as well as some new methods to teach writing. Your teacher will be giving you some tests to measure your writing skills.

We will be watching some of those classes this year. We would like to videotape you during classes. We will watch the videotape to see the writing lessons in your class. We would like to ask you questions about using technology for writing instruction. We would like to look at some of your written papers and test scores. We would like to look at some scores from your school records. Asking you questions will take only a few minutes of your time. This will not get in the way with any other classroom tasks.

#### **RISKS AND BENEFITS**

Nothing bad will happen to you if you do or do not take part in this study. There are no rewards or money paid for being in this study. We may find out things to help us prepare teachers to teach students how to write better. You might also learn how to write better papers.

## **CONFIDENTIALITY**

Your name will not be used. Your own test scores will not be used when we write our reports. We will never tell anyone who you are. We may use some of your words when we write our report, but we will never put your name to these words.

## **PARTICIPATION**

You don't have to talk to us if you don't want to. If you change your mind after we start talking and want to stop that is OK. We will not get mad, and nothing will happen to you.

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Project Number: 1338081-4

Date Approved: 9/10/2021

### **Institutional Review Board**

Approval Expiration Date: 9/9/2022

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## **CONTACT**

Our names are Anna Evmenova, Kelley Regan, and Amy Hutchison. We are professors at George Mason University. You can call us if you have any questions about this study.

The Institutional Review Board (IRB) Office at George Mason University (GMU) knows all about our research. They said that it was OK for us to do it. You can call GMU at 703-993-4121 if you have any questions about being a part of this research (IRBNet number: 1338081-1).

## **CONSENT**

I have read this form and I agree to be part of this study.

{Agree or do NOT agree to participate in the study}

I consent to the video recording of the instruction and my audio-recorded interviews. I understand that any video/audio recordings will be kept confidential:

{Agree or do NOT agree to video/audio recording.}

{Name (print)}

{Signature}

### **IRB: For Official Use Only**

Project Number: 1338081-4

Date Approved: 9/10/2021

### **Institutional Review Board**

Approval Expiration Date: 9/9/2022

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## Appendix C

### Technology-Based Graphic Organizer Screenshots




**Technology Based Graphic Organizer (TBGO)**



**1 Select a Prompt**

**2 Prompt selection:**

I can pick a side.	<input type="checkbox"/>	<input type="checkbox"/>
I am interested in writing about this prompt.	<input type="checkbox"/>	<input type="checkbox"/>
I chose this prompt.	<input type="checkbox"/>	<input type="checkbox"/>

**Pick your essay goal:** I will include 3 reasons and 3 explanations.

**Personal writing goal:** Choose your personal writing goal here!

**2 Fill out the table below. Click [here](#) to see an example.**

**3 Brainstorm:**

Visualize Images

Search Images

Draw a Picture

Make a Web

Make a List

Talk About It

	1 Key Words	2 Complete Sentences	3 Check Your Work
<p><b>1 Identify your opinion</b></p>	-		<input type="checkbox"/> included my opinion.
<p><b>2 Determine 1st reason</b></p>	-	Choose an item. ▾	
<p><b>3 Explain why or say more</b></p>	-	Choose an item. ▾	<input type="checkbox"/> included 3 different reasons to support my opinion.
<p><b>4 Determine 2nd reason</b></p>	-	Choose an item. ▾	
<p><b>5 Explain why or say more</b></p>	-	Choose an item. ▾	<input type="checkbox"/> have as many explanations as I planned to have in my goal.
<p><b>6 Determine 3rd reason</b></p>	-	Choose an item. ▾	
<p><b>7 Explain why or say more</b></p>	-	Choose an item. ▾	<input type="checkbox"/> I have useful transition words.
<p><b>8 Add transition words as you go!</b></p>			
<p><b>9 Summarize</b></p>	-	Choose an item. ▾	<input type="checkbox"/> summarized my opinion.

**3 Next, Copy the text in the orange box.**

4 Read your essay and edit it. Double click anywhere in the orange box to hear text read aloud.

Click [here](#) to see how your final essay should look.



5 Evaluate:

6 How many words do I have in my essay?

	Almost There	Got It!
1. I have a topic sentence that includes my opinion about the prompt.		
2. I have three different reasons to support my opinion.		
3. I have details and adjectives that explain my reasons.		
4. I have NOT repeated words too often.		
5. I have capital letters at the beginning of all my sentences.		
6. I have correct ending punctuation.		
7. I have checked the spelling of unfamiliar words.		
8. I have listened to my essay to make sure it makes sense.		

My next personal writing goal is:

Feedback: You have included  in your essay, which makes you a great writer!

## Appendix D

### Writing Prompts

1. Some believe 10-year-old kids should be able to stay home by themselves. Using specific details and examples to support your position, argue whether or not 10-year-old kids should be able to stay home by themselves. **PRETEST PROMPT - DO NOT USE DURING INSTRUCTION**
2. Some people believe in separate schools for boys and girls. Argue whether there should be separate schools for boys and girls and write an essay supporting your opinion. **PRETEST PROMPT - DO NOT USE DURING INSTRUCTION**
3. Some students go to school on Saturday. Write an essay on whether or not students should go to school on Saturdays. **POSTTEST WITH TBGO - DO NOT USE DURING INSTRUCTION**
4. Recess can be good for kids. Using specific details and examples to persuade someone of your opinion, argue whether or not kids should get more recess time. **POSTTEST WITH TBGO - DO NOT USE DURING INSTRUCTION**
5. Field trips are good experiences. Write an essay on whether or not your teacher should take the class on a field trip. **POSTTEST WITHOUT TBGO – DO NOT USE DURING INSTRUCTION**
6. Some teachers allow students to eat snacks in class. Write an essay on whether or not students should be allowed to eat in class. **POSTTEST WITHOUT TBGO - DO NOT USE DURING INSTRUCTION**
7. Some schools do not allow students to chew gum at school. Write an essay on whether or not students should be allowed to chew gum at school.
8. Many parents believe in setting an early bedtime. Using specific details and examples to persuade someone of your opinion, persuade your reader whether or not students your age should have an early bedtime.
9. Many students and parents believe school starts too early. Persuade your reader whether or not schools should begin later in the morning.
10. Some teachers believe students should be involved in creating school rules. Using specific details and examples to support your position, argue whether students your age should make rules for school.
11. Many young people believe they should not have to do chores at home. Write an essay that persuades your reader whether or not you believe students your age should have to do chores at home.
12. Summer camp can be a good experience. Using specific details and examples to persuade someone of your opinion, argue whether or not kids should go to summer camp.
13. Some people believe school lunches need to be healthier. Argue whether or not you believe school lunches should be healthier. Write an essay using details and examples to persuade someone of your opinion.

14. The President of the United States is a very important job. Using specific details and examples to support your position, persuade your reader whether or not students your age should be allowed to vote for the President of the United States.
15. Many people believe it is dangerous to ride a bike without a helmet. Using specific details and examples to support your position, argue whether or not people should be required to wear helmets when riding their bikes.
16. Some people believe young people get too much homework. Write an essay that argues whether or not teachers should limit homework.
17. Some parents believe their kids watch too much television. Using specific details and examples to persuade someone of your opinion, argue whether or not parents should limit the amount of television students can watch.
18. Some students believe that showering every day is not important. Using specific details and examples to persuade someone of your opinion, convince your reader whether or not people should shower every day.
19. Some people believe that breakfast is the most important meal of the day. Using specific details and examples to support your position, argue whether or not breakfast is the most important meal of the day.
20. Being an only child is better than having siblings. Argue whether being an only child or having siblings is better. Write an essay using details and examples to support your opinion.
21. Some people believe that reading is more important than math. Using specific details and examples to support your position, argue whether reading or math is more important.
22. Some people believe that playing video games are harmful. Using specific details and examples to support your position, argue whether or not playing video games are harmful or helpful for kids.
23. Some people believe kids your age should not have cell phones. Using specific details and examples to persuade someone of your opinion, argue whether or not kids your age should have cell phones.
24. Some people believe wearing pajamas in public is not acceptable. Using specific details and examples to support your position, argue whether or not wearing pajamas is acceptable.
25. Naps are important for kids of all ages. Using specific details and examples to persuade someone of your opinion, write an essay that argues whether or not kids of all ages should take naps.
26. Children's books should be written by children. Using specific details and examples to persuade someone of your opinion, argue whether or not children's books should be written by children.
27. Some students believe typing is easier than handwriting. Using specific details and examples to persuade someone of your opinion, argue whether or not typing is easier than handwriting.
28. Some people believe students should be able to go to the bathroom without asking. Using specific details and examples to persuade someone of your opinion, argue whether or not students should have to ask to go to the bathroom.
29. Everyone should have to exercise every day. Using specific details and examples to support your position, argue whether or not people should have to exercise every day.
30. Some people believe that schools should no longer have a summer vacation. Using specific details and examples to persuade someone of your opinion, argue whether or not schools should continue to have a summer vacation.

31. Some people believe that art class is more important than P.E. class. Using specific details and examples to support your position, argue whether art class or P.E. class is more important.
32. Some schools require students to take another language. Using specific details and examples to persuade someone of your opinion, argue whether or not students should be required to take another language.
33. Some students believe the school day should be shorter. Using specific details and examples to persuade someone of your opinion, argue whether or not the school day should be shorter.
34. Some people believe all fast-food restaurants should be closed. Using specific details and examples to persuade someone of your opinion, argue whether or not all fast-food restaurants should be closed.
35. Some people believe that young people should have the option of going to school online. Using specific details and examples to persuade someone of your opinion, argue whether or not school should or should not be online.

# Appendix E

## Overview of Instructional Lessons

**TBGO INSTRUCTIONAL LESSONS 1-6**

Lesson 1 Lesson 2  
Lesson 3 Lesson 4  
Lesson 5 Lesson 6

1. Getting Started  
Common vocabulary, initial orientation to TBGO

**WHAT DO YOU THINK?**  
*Winter is the best season.*

Agree Disagree

**LET'S WATCH A VIDEO!**

The root "PER" means *thoroughly*.  
The root "SUADE" means to *urge or argue*.  
What do you think PERSUADE means?

**To persuade means TO CONVINCE!**

**EXAMPLES!**  
I need to **persuade** my mom to let me go to the mall to get a new jacket.  
I **persuaded** my friend during lunch to trade her sandwich for my wrap.

**YOUR TURN TO SHARE A SENTENCE USING THE WORD PERSUADE!**

The root "GRAPH" means *to write*.  
Knowing that "GRAPH" means to write... what could the term GRAPHIC ORGANIZER mean?

**A GRAPHIC ORGANIZER is a tool that organizes writing.**

**YOU HAVE USED GRAPHIC ORGANIZERS BEFORE - SUCH AS VENN DIAGRAMS, BRAINSTORMING WEBS, AND EVEN T-CHARTS.**  
SHARE AN EXAMPLE!

**WHAT IS THE TBGO?**  
TECHNOLOGY-BASED GRAPHIC ORGANIZER

**STEP 1:** Click the link and look at the example TBGO  
[https://wego.gmu.edu/wego/graphorhtml/graphorg\\_sample1.html](https://wego.gmu.edu/wego/graphorhtml/graphorg_sample1.html)

**STEP 2:** Click the link and explore the TBGO yourself!  
[https://wego.gmu.edu/wego/graphorhtml/graphorg\\_p.php](https://wego.gmu.edu/wego/graphorhtml/graphorg_p.php)

**Now that you've explored the TBGO, what are some things you noticed about it?**  
SHARE AN EXAMPLE!

“ What are some questions you have about the **TBGO**?”

Exit Poll

“ What are your questions now?”

Exit Poll

2. TBGO for Persuasive Writing

Review More TBGO IDEAS

REVIEW!

The root “PER” means thoroughly.

The root “SUADE” means to urge or argue.

What does PERSUADE mean?

The root “GRAPH” means to write.

What does the term GRAPHIC ORGANIZER mean?

EXAMPLES! BY MY DINK!

WHAT IS THE TBGO? TECHNOLOGY-BASED GRAPHIC ORGANIZER

Scavenger Hunt

10:00 WORK IN PAIRS TO COMPLETE THE SCAVENGER HUNT!

Answer Key

How did you do? Questions?

WHAT'S A MNEMONIC?

You all have... I.D.E.A.S.!

Can we locate these persuasive parts using IDEAS?

Let's take a look back at the example essay!

Let's Review

What's in an I.D.E.A.S.?

3. Reviewing

Locate Transition Words in TBGO. Review IDEAS, Model the TBGO

LET'S REVIEW TRANSITION WORDS IN THE TBGO

You all have... **I.D.E.A.S.!**

--	--	--	--

You all have... **I.D.E.A.S.!**

--	--	--	--

You all have... **I.D.E.A.S.!**

--	--	--	--

You all have... **I.D.E.A.S.!**

--	--	--	--

You all have... **I.D.E.A.S.!**

Identify your question	Identify your question	Identify your question	Identify your question
What do you think about the topic?	You'll have to identify reasons to support your position.		
It's important to give a color	Why do you have opinions you do?		

You all have... **I.D.E.A.S.!**

Identify your question	Identify your question	Identify your question	Identify your question
What do you think about the topic?	You'll have to identify reasons to support your position.		
It's important to give a color	Why do you have opinions you do?		

You all have... **I.D.E.A.S.!**

Identify your question	Identify your question	Identify your question	Identify your question
What do you think about the topic?	You'll have to identify reasons to support your position.		
It's important to give a color	Why do you have opinions you do?		

You all have... **I.D.E.A.S.!**

Identify your question	Identify your question	Identify your question	Identify your question
What do you think about the topic?	You'll have to identify reasons to support your position.		
It's important to give a color	Why do you have opinions you do?		

You all have... **I.D.E.A.S.!**

Identify your question	Identify your question	Identify your question	Identify your question
What do you think about the topic?	You'll have to identify reasons to support your position.		
It's important to give a color	Why do you have opinions you do?		

You all have... **I.D.E.A.S.!**

Identify your question	Identify your question	Identify your question	Identify your question
What do you think about the topic?	You'll have to identify reasons to support your position.		
It's important to give a color	Why do you have opinions you do?		

You all have... **I.D.E.A.S.!**

Identify your question	Identify your question	Identify your question	Identify your question
What do you think about the topic?	You'll have to identify reasons to support your position.		
It's important to give a color	Why do you have opinions you do?		

**Can we locate these persuasive parts?**

Let's take a look at a new essay!

I believe that using technology is a good way for teachers to teach. First, using technology can make things easier for teachers. For example, teachers can use a document camera to speak or to provide feedback and it can all be stored on a Google Drive. Another reason, teachers should use technology is because it can help to reach students who are hard to reach. Finally, using technology can help kids learn because technology can have videos and graphics to explain concepts. In conclusion, I think teachers should use technology because it can make their teaching better.

Identify your question	Identify your question	Identify your question	Identify your question
What do you think about the topic?	You'll have to identify reasons to support your position.		
It's important to give a color	Why do you have opinions you do?		

**Fist to Five for IDEAS**

**Fist to Five**

- 1 completely understood (thumbs up)
- 2 mostly understood (thumbs up)
- 3 understand pretty well
- 4 need more practice and examples
- 5 I need help
- 6 don't understand at all

**4. Guided Practice**

Review IDEAS, Practice TB60

You all have... **I.D.E.A.S.!**

--	--	--	--

You all have... **I.D.E.A.S.!**

Identify your opinion	Get organized	Explain your ideas	Select transition words to use in an	Summarize
What do you think about the topic?	You'll have to identify a position to support your opinion.	Say more! Explain your ideas. Use a few concrete examples.	Select transition words, such as "In addition," "Furthermore," "Besides," "Therefore."	State your opinion again in a few words.
It's important to pick a side.	Why do you have opinions on it?	Use examples.		Reflect on your point.

LET'S SEE HOW TO PUT IT TOGETHER IN THE TBGO

LET'S WRITE AN ESSAY TOGETHER USING THE TBGO!

FOLLOW ALONG WITH ME ON YOUR DEVICE AND SHARE YOUR REASONS!

Fist to Five for Independent readiness

**Fist to Five**

- 1. I completely understand how to do it.
- 2. I mostly understand how to do it.
- 3. I understand pretty well.
- 4. I understand some parts, but need help.
- 5. I need help.
- 6. I don't understand it at all.

5. Independent Practice

Practice TBGO writing

REVIEW!

How will you pick your prompt? What will you do next? How can the TBGO help you if you feel stuck? What should you do when you are done writing for the day?

Complete Sentences & Transition Words

<https://www.groves.edu/transition-words>

Explain Why or Say More!

"I was really scared to ride the roller coaster. I felt a little sick, but excited at the same time. When the car clicked into place, I held on tight. When the ride started, I hoped for the best."

OR

"As I sat into the red plastic seat of the roller coaster, my mouth went dry and my hands felt clammy. The bar in front of me clicked into place and I gripped it so hard my knuckles turned white. I could taste the cotton candy I'd eaten earlier at the back of my throat. When the car jolted forward, my stomach dropped. I held my breath, and I told myself I would survive."

WRITE AN ESSAY INDEPENDENTLY USING THE TBGO!

FOLLOW ALONG WITH ME ON YOUR DEVICE AND SHARE YOUR IDEAS!

6. Writing without the TBGO

Plans for writing without the TBGO

Writing without the TBGO!

Let's look back at our brainstorming options!

<https://www.groves.edu/transition-words>

<https://www.groves.edu/transition-words>

<https://www.groves.edu/transition-words>

LET'S WRITE AN ESSAY TOGETHER WITHOUT USING THE TBGO!

SELECT A PROMPT

(a) Some people believe high school students should have to take an exit exam. Using specific details and examples to support your position, argue whether or not high school students should take an exit exam or not.

(b) Some people believe the driving age should be 14. Argue whether or not the driving age should be 14.

WRITING GOAL

(a) THREE REASONS AND 1 EXPLANATION

(b) THREE REASONS AND 2 EXPLANATIONS

(c) THREE REASONS AND 3 EXPLANATIONS

IDEAS!

IDENTIFY YOUR OPINION

DETERMINE 3 REASONS

EXPLAIN WHY OR SAY MORE

ADD TRANSITION WORDS AS YOU GO

SUMMARIZE

SELF-MONITOR

- I included my opinion.
- I included 3 different reasons to support my opinion.
- I have as many explanations as I planned to have in my goal.
- I have useful transition words.
- I summarized my opinion.

SELF-EVALUATE

Criteria	Met	Goal
1. I have a clear opinion that I included in my writing about the prompt.	Yes	Yes
2. I have three different reasons to support my opinion.	Yes	Yes
3. I have details and examples that support my reasons.	Yes	Yes
4. I have 3-5 transition words in my writing.	Yes	Yes
5. I have explained the connection between my reasons and my opinion.	Yes	Yes
6. I have explained the quality of my writing.	Yes	Yes
7. I have summarized my opinion at the end of my writing.	Yes	Yes

YOUR TURN

WE WRITE

The Missouri state constitution (Article I, Section 2, Paragraph 1) states that the Missouri Department of Education shall "ensure that all students in the state have the opportunity to learn and achieve at a high level." The Missouri Department of Education is committed to ensuring that all students have the opportunity to learn and achieve at a high level. The Missouri Department of Education is committed to ensuring that all students have the opportunity to learn and achieve at a high level.

# Appendix F

## TBGO Completed Example

Technology Based Graphic Organizer Plus (TBGO+)

Name: Oscar
Date: 2020-08-31 15:45:05

**1 Select a Prompt**

<p><b>2 Prompt selection:</b></p>	<p>Some people believe that ice-cream is the best dessert, while others do not. Using specific details and examples to support your position, argue for or against ice-cream being the best dessert.</p>	<p>Some people believe in separate schools for boys and girls. Argue whether there should be separate schools for boys and girls and write an essay supporting your opinion.</p>
I can pick a side.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
I am interested in writing about this prompt.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
I chose this prompt.	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Pick your essay goal: **I will include 3 reasons and 3 explanations.**

Personal writing goal: **I will write a relevant topic sentence that includes my opinion.**

**2 Fill out the table below. Click [here](#) to see an example.**

**3** Brainstorm:

Visualize Images

Search Images

Draw a Picture

Make a Web

Make a List

Talk About It

	Key Words	Complete Sentences	Check Your Work
<b>1</b> Identify your opinion	best dessert	Ice-cream is the best dessert ever.	<input checked="" type="checkbox"/> included my opinion.
<b>2</b> Determine 1st reason	flavor	First, ice-cream comes in many flavors.	
<b>3</b> Explain why or	choices	For example, ice-cream can be vanilla or chocolate, and you can pick the one you like.	<input checked="" type="checkbox"/> included 3 different support my opinion.
<b>4</b> Determine 2nd reason	cold	Also, it is cold.	
<b>5</b> Explain why or say more	nice in summer	To illustrate, it is good to have in the summer time to cool you off.	<input checked="" type="checkbox"/> have as many explanations as I planned to have in my goal.
<b>6</b> Determine 3rd reason	delicious	Finally, ice-cream is very delicious.	
<b>7</b> Explain why or say more	want more	Specifically, it is so delicious that you always want more.	
<b>8</b> Add transition words as you go			<input checked="" type="checkbox"/> have useful transition words.
<b>9</b> Summarize	many reasons to like	In conclusion, there are many reasons that ice-cream is the best dessert.	<input checked="" type="checkbox"/> summarized my opinion.

## Appendix G

### Lesson 1 Fidelity Checklist

\*Note: Ensure that the video is recording.

The intervener:	YES	NO
1. Provides instruction on what it means to persuade with root words and examples.	<input type="checkbox"/>	<input type="checkbox"/>
2. Provides instruction on what a graphic organizer is with root words and examples.	<input type="checkbox"/>	<input type="checkbox"/>
3. Makes connection between persuasive writing and graphic organizer by showing Video 1: Introduction of the TBGO.	<input type="checkbox"/>	<input type="checkbox"/>
4. Provides an example of a completed TBGO for students to explore.	<input type="checkbox"/>	<input type="checkbox"/>
5. Allows students to independently explore features of the tool and to try various features of the tool with guidance.	<input type="checkbox"/>	<input type="checkbox"/>
6. Offers an opportunity for students to openly discuss what they noticed about the TBGO.	<input type="checkbox"/>	<input type="checkbox"/>
7. Concludes lesson with formative assessment of <i>persuade</i> and <i>graphic organizer</i> .	<input type="checkbox"/>	<input type="checkbox"/>

Conclude by turning off the video recording.



## Appendix I

### Sample Essay 1

Ice-cream is the best dessert ever. First, ice-cream comes in many flavors. For example, ice-cream can be vanilla or chocolate, and you can pick the one you like. Also, it is cold. To illustrate, it is good to have in the summer time to cool you off. Finally, ice-cream is very delicious. Specifically, it is so delicious that you always want more. In conclusion, there are many reasons that ice-cream is the best dessert.

## Appendix J

### Lesson 2 Fidelity Checklist

\*Note: Ensure that the video is recording.

The intervener:	YES	NO
1. Reviews the terms “persuade” and “graphic organizer” and provides examples.	<input type="checkbox"/>	<input type="checkbox"/>
2. Provides class discussion on a time students engaged in persuasion.	<input type="checkbox"/>	<input type="checkbox"/>
3. Instructs students to complete the Scavenger Hunt to familiarize students with the TBGO.	<input type="checkbox"/>	<input type="checkbox"/>
4. Provides answers to the Scavenger Hunt.	<input type="checkbox"/>	<input type="checkbox"/>
5. Provides explicit instruction on the IDEAS mnemonic by explaining what each letter represents through modeling an essay.	<input type="checkbox"/>	<input type="checkbox"/>
6. Demonstrates how the IDEAS mnemonic is embedded in a sample persuasive essay.	<input type="checkbox"/>	<input type="checkbox"/>
7. Concludes lesson with formative assessment of recalling the mnemonic IDEAS.	<input type="checkbox"/>	<input type="checkbox"/>

Conclude by turning off the video recording.

## Appendix K

### Sample Essay 2

I believe that using technology is a good way for teachers to teach. First, using technology can make things easier for teachers. For example, teachers can use electronic forms to grade or to provide feedback and it can all be stored on a Google Drive. Another reason, teachers should use technology is because it can help to motivate their students to work. Finally, using technology can help kids learn because technology can have videos and graphics to explain concepts. In conclusion, I think teachers should use technology because it can make their teaching better.

## Appendix L

### Lesson 3 Fidelity Checklist

\*Note: Ensure that the video is recording.

The intervener:	YES	NO
1. Reviews how to locate transition words within the TBGO.	<input type="checkbox"/>	<input type="checkbox"/>
2. Reviews, through discussion, the components of the IDEAS mnemonic.	<input type="checkbox"/>	<input type="checkbox"/>
3. Presents the sample essay from Lesson 2 and provides direct instruction for locating the persuasive elements (IDEAS) within the essay.	<input type="checkbox"/>	<input type="checkbox"/>
4. Students will locate through independent or guided practice the persuasive elements (IDEAS) within a new essay.	<input type="checkbox"/>	<input type="checkbox"/>
5. Concludes with formative assessment (fist to five) for students to indicate their understanding of persuasive elements (IDEAS).	<input type="checkbox"/>	<input type="checkbox"/>

Conclude by turning off the video recording.

## Appendix M

### Lesson 4 Fidelity Checklist

\*Note: Ensure that the video is recording.

The intervener:	YES	NO
1. Reviews the IDEAS mnemonic.	<input type="checkbox"/>	<input type="checkbox"/>
2. Uses guided practice for how to complete the TBGO via a think aloud, while including student input.	<input type="checkbox"/>	<input type="checkbox"/>
3. Prompts students to identify complete all five steps of the TBGO		
a. Picking an Essay Goal and a Personal Goal	<input type="checkbox"/>	<input type="checkbox"/>
b. Fill out the table	<input type="checkbox"/>	<input type="checkbox"/>
c. Copy	<input type="checkbox"/>	<input type="checkbox"/>
d. revise and edit	<input type="checkbox"/>	<input type="checkbox"/>
e. self-evaluate	<input type="checkbox"/>	<input type="checkbox"/>
4. Highlights ALL features of the graphic organizer:		
a. Select a goal from drop down menu	<input type="checkbox"/>	<input type="checkbox"/>
b. Video models (content and how-to)	<input type="checkbox"/>	<input type="checkbox"/>
c. Audio comments	<input type="checkbox"/>	<input type="checkbox"/>
d. Text reminders when hovering over	<input type="checkbox"/>	<input type="checkbox"/>
e. Drop down menu/pop-up windows for transition words	<input type="checkbox"/>	<input type="checkbox"/>
f. Self-monitoring checklist	<input type="checkbox"/>	<input type="checkbox"/>
g. Copy and paste reminders	<input type="checkbox"/>	<input type="checkbox"/>
h. Text-to Speech feature	<input type="checkbox"/>	<input type="checkbox"/>
i. Self-evaluation count of words	<input type="checkbox"/>	<input type="checkbox"/>
j. Self-evaluation of writing – rate your writing	<input type="checkbox"/>	<input type="checkbox"/>
k. Exchanging with peer (if time) for feedback	<input type="checkbox"/>	<input type="checkbox"/>
5. Concludes with a formative assessment (fist to five) for students to indicate their understanding of the persuasive elements (IDEAS). Conclude by turning off the video recording.	<input type="checkbox"/>	<input type="checkbox"/>

## Appendix N

### Lesson 5 Fidelity Checklist

\*Note: Ensure that the video is recording.

The intervener:	YES	NO
1. Provides a review of the technology-based graphic organizer.	<input type="checkbox"/>	<input type="checkbox"/>
a. How will you pick your prompt?	<input type="checkbox"/>	<input type="checkbox"/>
b. What will you do next?	<input type="checkbox"/>	<input type="checkbox"/>
c. How can TBGO help if you get stuck?	<input type="checkbox"/>	<input type="checkbox"/>
d. What to do when you are done writing?	<input type="checkbox"/>	<input type="checkbox"/>
2. Reviews the “complete sentences” and “transition words” components.	<input type="checkbox"/>	<input type="checkbox"/>
3. Provides direct instruction on how to “explain why or say more.”	<input type="checkbox"/>	<input type="checkbox"/>
4. Instructs students to independently complete an essay using the technology-based graphic organizer.	<input type="checkbox"/>	<input type="checkbox"/>
Conclude by turning off the video recording.		

## Appendix O

### Lesson 6 Fidelity Checklist

\*Note: Ensure that the video is recording.

The intervener:	YES	NO
1. Recreates the IDEAS mnemonic.	<input type="checkbox"/>	<input type="checkbox"/>
2. Selecting a prompt.	<input type="checkbox"/>	<input type="checkbox"/>
3. Generates a personal writing goal.	<input type="checkbox"/>	<input type="checkbox"/>
4. Writes an essay using the IDEAS mnemonic via a think aloud.	<input type="checkbox"/>	<input type="checkbox"/>
5. Self-monitors.	<input type="checkbox"/>	<input type="checkbox"/>
6. Self-evaluates.	<input type="checkbox"/>	<input type="checkbox"/>

Conclude by turning off the video recording



## Appendix P

### Idea Generation Think Aloud Protocol - “Pretest”

During the one-on-one think aloud, students will be asked to verbalize their thinking in response to a prompt. They can say and write as much or as little as they wish. These think alouds are not timed but are limited to one session.

Please make sure that:

- a. The student has a Chromebook open with a “Pretest” Google Doc (can be a blank document).
- b. The audio recording device is on. Please make sure to say into the device, your name, student name, date, class period, teacher, and condition (e.g., *Mrs. Murnan with Marshall, March 16th, 3rd block, Ms. Cunningham’s class, pretest*). Make sure that students who did not provide assent/parent consent are not participating.

Intervener will say the following directions to the students during “pretest”:

*“Today I am asking you to write in response to a prompt. You see two prompts on your screen. You will need to choose ONE of the prompts to respond to. I will read the prompts out loud for you in a moment. As you write in response to the prompt you choose, I want you to tell me everything that you are thinking in your head. This helps to give me an idea of what you think about when you write. So, as you are writing your essay, you will be telling me about the things that are coming to mind. Make sense? I will ask you some questions throughout this process to help you give me an idea of what is going on in your head. Do your best to tell me every little thing that you are thinking as you’re writing. Okay? Do your best with responding and spelling words since I cannot help you with this part. Any questions?”*

1. Some believe 10-year-old kids should be able to stay home by themselves. Using specific details and examples to support your position, argue whether or not 10-year-old kids should be able to stay home by themselves.
2. Some people believe in separate schools for boys and girls. Argue whether there should be separate schools for boys and girls and write an essay supporting your opinion.

#### **Potential Probing Questions:**

“Can you tell me about the prompt you will choose and why?”

“Can you tell me more about that thought?”

“As you are writing, did you think of anything additional?”

“Is there anything else that you thought about while writing that you did not share?”

“The ideas that you are coming up with.... How are you getting these ideas?”

## Appendix Q

### Idea Generation Think Aloud Protocol - “Posttest” WITH TBGO

During the one-on-one think aloud, students will be asked to verbalize their thinking in response to a prompt. They can say and write as much or as little as they wish. These think alouds are not timed but are limited to one session.

Please make sure that:

- a. The student has a Chromebook open with a “Posttest with TBGO” Google Doc (can be a blank document).
- b. The audio recording device is on. Please make sure to say into the device, your name, student name, date, class period, teacher, and condition (e.g., *Mrs. Murnan with Marshall, March 16th, 3rd block, Ms. Cunningham’s class, posttest with TBGO*). Make sure that students who did not provide assent/parent consent are not participating.

Intervener will say the following directions to the students during “posttest” with the TBGO:

*“Today I am asking you to write in response to a prompt. You see two prompts on your screen. You will need to choose ONE of the prompts to respond to. I will read the prompts out loud for you in a moment. As you write in response to the prompt you choose, I want you to tell me everything that you are thinking in your head. This helps to give me an idea of what you think about when you write. So, as you are writing your essay, you will be telling me about the things that are coming to mind. Make sense? I will ask you some questions throughout this process to help you give me an idea of what is going on in your head. Do your best to tell me every little thing that you are thinking as you’re writing. Okay? Do your best with responding and spelling words since I cannot help you with this part. Any questions?”*

1. Some students go to school on Saturday. Write an essay on whether or not students should go to school on Saturdays.
2. Recess can be good for kids. Using specific details and examples to persuade someone of your opinion, argue whether or not kids should get more recess time.

#### **Potential Probing Questions:**

“Can you tell me about the prompt you will choose and why?”

“Can you tell me more about that thought?”

“As you are writing, did you think of anything additional?”

“Is there anything else that you thought about while writing that you did not share?”

“The ideas that you are coming up with.... How are you getting these ideas?”

## Appendix R

### Idea Generation Think Aloud Protocol - “Posttest” WITHOUT TBGO

During the one-on-one think aloud, students will be asked to verbalize their thinking in response to a prompt. They can say and write as much or as little as they wish. These think alouds are not timed but are limited to one session.

Please make sure that:

- a. The student has a Chromebook open with a “Posttest without TBGO” Google Doc (can be a blank document).
- b. The audio recording device is on. Please make sure to say into the device, your name, student name, date, class period, teacher, and condition (e.g., *Mrs. Murnan with Marshall, March 16th, 3rd block, Ms. Cunningham’s class, posttest without TBGO*). Make sure that students who did not provide assent/parent consent are not participating.

Intervener will say the following directions to the students during “posttest” without the TBGO:

*“Today I am asking you to write in response to a prompt. You see two prompts on your screen. You will need to choose ONE of the prompts to respond to. I will read the prompts out loud for you in a moment. As you write in response to the prompt you choose, I want you to tell me everything that you are thinking in your head. This helps to give me an idea of what you think about when you write. So, as you are writing your essay, you will be telling me about the things that are coming to mind. Make sense? I will ask you some questions throughout this process to help you give me an idea of what is going on in your head. Do your best to tell me every little thing that you are thinking as you’re writing. Okay? Do your best with responding and spelling words since I cannot help you with this part. Any questions?”*

1. Field trips are good experiences. Write an essay on whether or not your teacher should take the class on a field trip.
2. Some teachers allow students to eat snacks in class. Write an essay on whether or not students should be allowed to eat in class.

#### **Potential Probing Questions:**

“Can you tell me about the prompt you will choose and why?”

“Can you tell me more about that thought?”

“As you are writing, did you think of anything additional?”

“Is there anything else that you thought about while writing that you did not share?”

“The ideas that you are coming up with.... How are you getting these ideas?”

## Appendix S

### Total Written Words (TWW)

(Informed by [interventioncentral.org](http://interventioncentral.org) and CBM-W measures)

Total Words Written (TWW) Defined: The examiner counts and records the total number of words written. Misspelled words are included in the tally, although numbers written in numeral form (e.g., 5, 17) are not counted. Calculating total words is the quickest of scoring methods.

Procedure for scoring Baseline or Pretest:

Use Microsoft Word Count BUT follow rules above and below.

e.g., I have 4 papers and I don't know how I did but the the teacher said I will get an F.

Microsoft Word says 21 words BUT there are 18 TWWs in this sentence based on the rules.

Procedure for scoring Instructional Phase or Posttest with use of TBGO:

Anything with TBGO is likely to be loaded as a PDF of the entire completed TBGO. Scroll to Part 4 of the TBGO to see the final essay in the orange box. Use TBGO total word count in the self-evaluation component (*How many words do I have in my essay?* - see below pic) of TBGO BUT verify with Microsoft Word (if you can copy and paste into a Word Doc) AND follow scoring rules above and below to ADJUST that number in the box that is auto populated.

use electronics is 3 hours a day so then our eyes can have a brake. To rephrase, We only need to use electronics for 3 hour's a day if more then we will only see a blur.

9.

5 Evaluate: 

How many words do I have in my essay?  
288

	Almost Almost There	Got It!
1. I have a topic sentence that includes my opinion about the prompt.		
2. I have three different		

**Scoring decisions (to add to as nuances may come up):**

1. Yes, to counting misspelled words as words when it is clear what they were attempting to spell.
2. Yes, to counting articles.
3. Do NOT count letters or words that are unnecessarily repeated.
4. Do NOT count those that have no meaning like a, a, a, a... (e.g., student writes Prompt B - don't count the 'B' as a word; student refers to letters grades of F - do not count 'F' as a word)
5. Only count words in response to the FIRST selected prompt IF the student responds to both prompts.
6. Count words that are not separated with a space as two separate words. (Pay attention to commonly misspelled words (i.e., Alot vs a lot, Everyday vs every day - these count as two as well).
7. If student response refers to a letter - such as Choice A or Prompt B - do not count the individual letters but the rest of the words (regardless of meaning) are counted. So, "I am choosing choice A..." would be a total of 4 words.
8. Contractions are counted as one word. (But recall if word represented is repeated, don't count the repeated word. E.g., "shouldn't not go to the store": would be a total of 4 words since 'not' is repeated.

## Appendix T

### Rubric for Writing Quality

Rubric for Writing Quality			
	0	1	2
<b><u>I</u>dentify Your Opinion</b>	The writer has <b>yet</b> to write anything to identify an opinion about the prompt.	The writer includes a complete or an incomplete thought or sentence fragment, <b>but it does not clearly identify the writer’s opinion.</b>	The writer includes a complete thought that clearly identifies the writer’s opinion <b>and includes key vocabulary</b> from the prompt.
<b><u>D</u>etermine Reasons</b>	The writer <b>has yet</b> to <b>Determine</b> a clear reason to support his/her opinion.	The writer has <b>Determined</b> less than <b>three reasons</b> that support his/her opinion, <b>or three reasons that they may be repetitive.</b>	The writer has <b>Determined</b> three reasons that support their opinion, <b>and they are distinct (not repetitive).</b>
<b><u>E</u>xplain Why or Say More</b>	The writer <b>has yet</b> to <b>Explain</b> why or say more for any of the reason(s).	The writer includes <b>one or two complete thoughts</b> that are <b>clearly related</b> to one or <b>two separate reasons</b> and each complete thought <b>Explains</b> why/says more.	The writer includes <b>three complete thoughts</b> that are <b>clearly related</b> to <b>three separate reasons</b> and each complete thought <b>Explains</b> why/says more.
<b><u>A</u>dd Transition Words</b>	The writer <b>has yet</b> to add transition words that start a sentence(s).	_____	The writer <b>adds</b> relevant and useful transition word(s) that start a sentence

			(s).
<b><u>Summarize</u></b>	The writer <b>has yet</b> to summarize his/her writing anywhere in the response.	The writer includes <b>an incomplete/complete thought</b> that <b>restates the opinion but does not clearly imply the prompt</b> and the thought is not <b>focused</b> (extraneous details present).	The writer includes a complete sentence that restates the opinion, is clear, focused, and <b>uses similar but different words than those included in the topic sentence.</b>

## Appendix U

### Transcripts of the Think Aloud Protocol

#### **Brandon – (student with high-incidence disability)**

I don't know what to pick

*(Can you tell me about the prompt you'll choose and why?)*

Some students go to school on Saturday. I picked that because, well, you need a break from school. At least like three days. [inaudible] I wish it was only Saturday and Sunday but I think kids should have [inaudible].

*(Okay- and you can go ahead and keep on keeping on)*

2:40 *(Could you tell me about what you're doing there?)*

Um, so my opinion is, "some students go to school on Saturday."

*(And were you doing some copy and pasting?)*

Yeah.

Um so my first reason is because, well, students need a break from school. They need at least two days off. They need to spend time with their family at least two days and have fun.

4:55 My third reason- "Finally,

*(Can you tell me about why you deleted that?)*

Well, I was trying to make a sentence but like it doesn't make much sense.

Third reason why would be students get very sleepy on school days. To summarize,

7:23 Okay, I'm done

*(And the ideas that you are coming up with about sleeping in and getting a break, how are you coming up with those ideas?)*

Well, because every day you have to wake up early to go to school and they don't get that much sleep, so that's why they should get Saturday and Sunday off. Cause they could wake up at like 10 and 11 and get more sleep.

*(Is there anything that you thought about while you were writing that you didn't share?)*

No.

#### **Becky – (proficient writer)**

I am going to choose the recess prompt because I know that I feel refreshed when we come back inside from lunch, which people don't typically eat at lunch in our school because they want to play around, so I think having a separate recess time would be good. Now I am going to choose an essay goal.

1:50 My opinion is obviously that we should have recess because it helps students refocus when they come back. So, for the hook I am going to write... oh- if you are working for a long time, don't you just need a break sometimes? Many students feel that they do. I know I am not the only one because I can see the difference from when we

have come back from lunch and when we have not. Students should have a recess time because it can help them focus- or refocus rather, it allows them to have some free time, so they don't feel overworked, and what else do I want to say? Oh- and it allows them to get some exercise.

3:45 Okay, so "To start, I feel like that's a good starting- having a break helps students to refocus when they come back. For instance, when students go to lunch, they may choose not to eat so that they can have free time and when we return, they are more focused and less drowsy. (Shared personal story). Having a break clears the mind and allows the person to see more clearly, helping their work become- or making them become more efficient. There we go. I know for a fact that last year when we were doing distance learning and staring at the screen, I would take like a 30-minute lunch or they would just give us free time and I would come back and be like that is such an obvious problem now I want to be able to go back and fix it and be more efficient since I am not staring at the same problem over and over again.

6:06 Secondly... Another reason, recess allows for free time, which most students want and need to become more successful. Specifically, when students have free time, they are less likely to stress about school stuff because they do not have to worry about the problems if they are just having free time. When one of my friends was going through like- she applied to the academy- she got in but she wasn't sure if she wanted to go and then she had other school stuff going on. Whenever we would come back- she would come out to lunch and she would be super-duper stressed and we would just fool around and she would be in a much better mood by the time she went back. Sometimes it just allows kids to just be kids and not worry about all bigger life problems.

8:09 And then lastly, having a recess gives students more opportunities to be physically active. I know sitting around in the classroom is not very physically active and I also know that when we go out to lunch and we are out in the basketball courts we are allowed to run around and it definitely helps. Okay, and then the summary section. In conclusion, students would benefit from having a recess because it would allow them to be more active, it would refocus their attention, and would allow them to not have to constantly feel stressed. I'll check all the boxes and make sure I've done everything.

I have a topic sentence that includes my opinion about the prompt- yes

I have three different reasons to support my opinion- yes

I have details and adjectives to explain my reasons- yes

I have not repeated words too often- [inaudible]

I have capital letters at the end of my sentences

I have correct ending punctuation

I don't have any redlines so my spelling is correct

And I have not listened to my essay

I read it out loud, so that's technically listening.

Personal writing goal is to restate my opinion in a summary that is persuasive and concise. I feel like the end isn't always persuasive, it's just a summary.

*(The ideas that you are coming up with, how are you getting these ideas?)*

Um I am just thinking about what happens in my life and how I can apply that to the topic that I am writing about

*(And was there anything else that you thought about while writing that you didn't share?)*

No.

*(As you were writing did you think of anything additional?)*

As I was writing the ideas just sort of came to me, so like I was thinking of lunch and how recess would benefit us and then things would come to me through there that I might not have thought of.

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## **Biography**

Reagan D Murnan received her Bachelor of Arts and her Master of Education in Special Education from George Mason University. She was employed as a teacher in Loudoun County and received her Master of Education in Special Education from George Mason University in 2013. Reagan and her family relocated to Wichita, Kansas to pursue a career in higher education. Reagan is currently an assistant professor at Wichita State University. She chairs the Special Education High-Incidence Alternative Certification Program and is the program coordinator for USD 259 Cohort Model Partnership Program. She is a co-director of the ARISE (Achieving Results in Special Education) Research Collaborative, which serves as a link between research and practice for schools and the community. In her free time, Reagan enjoys cheering for DC sports teams, cooking, and exploring.