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# Exploring the Effects of a Biopoem Writing Intervention on Middle School Students With Autism Spectrum Disorder

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The purpose of this study was to explore how poetry writing can promote growth in social cognition, writing, and disciplinary literacy for middle school students diagnosed with autism spectrum disorders. An interpretive qualitative content analysis design was used to explore the instructional discourse and written products of the participants during a writing intervention using biopoems to learn about important people in history. Main findings indicated that participants were able to recognize and use emotion/perspective taking words, that the biopoem structure was effective in organizing their writing and enhancing word choice, and that they demonstrated disciplinary literacy through perspective taking and identification of historical significance. The discourse that accompanied the biopoem lessons included evidence of thinking processes and emerging understandings that resulted from the writing process. The context of conversation also allowed for higher order thinking and intertextuality to occur. Implications for practice and future research are discussed. **Key words:** *autism spectrum disorders*, *disciplinary literacy*, *poetry*, *social cognition*, *social studies*, *theory of mind*, *writing*, *written expression*

WRITING IS an essential and useful life skill, offering a means of communication and an avenue to demonstrate critical thinking skills and disciplinary literacy. Although people with autism spectrum disorder (ASD) exhibit considerable variability in terms of writing ability, many perform well below their peers in written expression (Bishop, Sawyer, Alber-Morgan, & Boggs, 2015). Research on the writing of individuals with ASD suggests differences in product length, quality, and complexity compared with typically developing peers (Brown, Johnson, Smyth, & Oram Cardy, 2014). Students with ASD may struggle with physical, cognitive, and self-regulatory aspects of the writing process, including handwriting, the ability to plan, generate, and organize ideas, relate details, retell events, and identify author's purpose and readers' needs (Asaro-Saddler, 2014; Constable, Grossi, Moniz, & Ryan, 2013). Writers with ASD also may have difficulty with synthesizing details or evidence to arrive at a main idea (Constable et al.).

Various hypotheses have been generated to explain the characteristics of writers with ASD. Writing is a goal-directed activity that requires planning, flexibility, self-monitoring, and generalization of previous knowledge and learned skills; thus, it necessitates the use of executive functioning processes. Individuals with ASD present difficulties in this domain (Hill, 2004), which may hinder their performance on writing tasks. Deficits in

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social cognition—more specifically, an inability to understand and describe mental states of self and others (i.e., theory of mind)—also has been identified as a potential reason that some people with ASD struggle to write well (e.g., Brown & Klein, 2011). In this article, we discuss the use of a writing intervention to evaluate the social cognition and disciplinary literacy (the reading, writing, and thinking in which students engage to meaningfully produce knowledge in a discipline) of middle school students diagnosed with ASD. Because poetry writing is a heavily socially contextualized process (Wilson & Dymoke, 2017), we used a type of poem called biopoem, a poem that is written to describe a person or a character, as the vehicle for written expression and the authentic use of writing as a tool for learning at the intersection of social cognition and social studies learning.

## THEORY OF MIND IN ASD

There are differences in how individuals on the autism spectrum attend, attune to, and process social interactions (Bauminger-Zviely, 2013). As a result, individuals with ASD often display deficits in social communication and interaction, such as interpreting facial expressions and nonverbal cues or gestures, responding to others' emotions, demonstrating reciprocity in communication, and adapting flexibly within a social environment (Tager-Flusberg, 1999). The sociocognitive profiles of children with ASD change throughout development. Differences in social responsiveness and interaction are evident early in infancy for children with the disorder; however, as they grow, the magnitude and pervasiveness of these differences will evolve (Bauminger-Zviely). Baron-Cohen, Leslie, and Frith (1985) proposed that these differences were related to perceiving and understanding mental states, concluding that children with ASD exhibit a deficit in theory of mind when compared with their typically developing peers—what came to be known as the *theory of mind hypothesis*.

### Impact of theory of mind deficits

Much research has explored the implications of mental state understanding for social interaction in ASD. Findings indicate that theory of mind underlies event knowledge, conversation, and the formation of appropriate social skills (Loth, Gómez, & Happé, 2008). A deficit in theory of mind can also impact the ability to use perceptions of belief and emotion to understand intentions and behaviors. This may impede the development of a range of social competencies. For example, a child may struggle to join and participate in a group, to demonstrate leadership skills for working with others, or to advocate for oneself (Peterson, Slaughter, Moore, & Wellman, 2016). Importantly, research also shows the unique complexity of this relationship in children with ASD, where the effect of theory of mind on social skills is mediated by language ability (Peterson et al.). Beyond implications for social behavior, others have suggested that theory of mind deficits can impact academic performance in students with ASD, particularly in the area of literacy (Carnahan, Williamson, & Christman, 2011). Given that literacy is required across disciplines, negative effects on the academic performance of students with ASD may be pervasive.

### Theory of mind and writing in ASD

The association between literacy skills of students with ASD and theory of mind has been explored in both verbal and written contexts. For example, when comparing the storybook narratives of children with and without ASD, researchers have found that participants with ASD scored lower on both theory of mind and writing quality measures, using fewer mental state terms in their narratives (Siller, Swanson, Serlin, & Teachworth, 2014). These findings are consistent with research in which children with ASD make fewer accurate references to psychological and emotional states when narrating events (Losh & Caps, 2003). When examining the written products of students with ASD, researchers have found that

participants who performed better on the measures of theory of mind and social cognition had longer narratives and expository essays and higher writing quality scores (Brown & Klein, 2011). Only one known study has applied an intervention that focused on writing and mental state language in students with ASD, using Self-Regulated Strategy Development to improve story composition skills and increase use of mental state terms in writing (Mourgkasi & Mavropoulou, 2017). Results indicated that participants improved the quality of written narratives and increased references to thoughts and emotions.

Although results have indicated that theory of mind may directly impact writing for students with ASD, and that interventions targeting theory of mind may positively impact writing, more research is necessary in this area. In addition, the limited research base has focused on narrative writing; no known studies have looked at theory of mind in the context of content area writing or write-to-learn activities.

## DISCIPLINARY LITERACY AND WRITING TO LEARN

Disciplinary literacy refers to the reading, writing, and thinking in which students engage to meaningfully produce knowledge in a discipline (Moje, 2008). Writing is important as a disciplinary tool in social studies, because historical inquiry requires the interpretation of historical accounts and the writing of arguments (Monte-Sano, 2012). Curriculum standards suggest a broad focus on the development of the learner within a social context and through historical interpretation, where creative ideas are developed on the basis of evidence in written and spoken discourse (Bulgren, Graner, & Deshler, 2013; Levstik & Barton, 2011). Therefore, using the process of writing to build new understandings is a natural outgrowth of the discipline (Cantrell, Fusaro, & Doughtery, 2000; Perin, 2011). The most effective write-to-learn activities include writing to summarize and synthesize content, short, frequent, and rapid writing activities to respond to content information, and differentiation across levels of skill (Bangert-Drowns, Hurley, & Wilkinson, 2004; Graham & Herbert, 2010). Each of these evidence-based practices was used in the existing qualitative and anecdotal literature of social studies activities situated in poetic frames.

## POETRY IN SOCIAL STUDIES

A benefit of poetry as a strategy in historical interpretation is the promotion of higher level thinking and social cognition through the use of procedural disciplinary skills in social studies, including perspective-taking (Duhlberg, 2002; Levstik, 2000). In the context of social studies, perspective-taking promotes a deep understanding of human motivation for action throughout history. It allows students to use ideas from history combined with their own personal perspective to develop theories, warrants, and evidence in the creation of historical argument and new knowledge (Van Sledright, 2014). Writing activities with a specific purpose like promoting the interpretation of information can result in learning related to the targeted topic (Graham & Hebert, 2010). The use of biographical poetry such as biopoems provides an authentic activity in which to explore human emotion in historical context.

### Biopoem writing

The standard biopoem format provides a scaffold to disciplinary thinking as it directs students' organization of details to address ideas related to perspective-taking, interpretation, and significance of historical experience (Ellis-Robinson, 2015). Researchers who have used biographical poems in social studies report students' development of affective understanding of historical content and contexts (Ellis-Robinson; Frye & Hash, 2013; Haley & Huddleston, 2003; Levstik & Barton, 2011), as well as higher scores on tests of declarative knowledge of social studies facts (Webre, 2002). Students use perspective-taking related to historical figures and

identification of historical significance to summarize and synthesize social studies content in such poems (Ellis-Robinson; Frye & Hash; Haley & Huddleston; Levstik & Barton), a rich opportunity for learners to practice ways of thinking that could help them as writers. Furthermore, composing biopoems creates a context in which disciplinary literacy practices including discussion can thrive (Ellis-Robinson; Rudnitsky, 2013).

## INSTRUCTIONAL DISCOURSE

The sociocultural development of knowledge via dialogic interaction in the classroom is based on Vygotskian theory of novice and expert interaction driving knowledge building and meaning making (Vygotsky, 1978). Over time, discourse in instruction can serve to solidify and clarify concepts, procedures, and understandings (Dull & Morrow, 2008). Several theorists have recognized instructional discourse as a method to promote higher order thinking (Dull & Morrow; Elizabeth, Anderson, Snow, & Selman, 2012; Rudnitsky, 2013). In the context of biopoem construction during social studies, the processes of learning and knowledge construction are evident in instructional discourse, including talk between students and teachers.

Researchers have recommended the use of discourse analysis with individuals with ASD to examine their interactions in social contexts, which can provide insightful information on how to approach assessment and intervention (O'Reilly, Lester, & Muskett, 2016). Discourse analysis has been used to examine the oral narratives of students with ASD (e.g., Bottema-Beutel & White, 2016), but no known studies have used discourse analysis to explore their writing.

## INTERSECTIONS AND PURPOSE

Writing requires the presentation of developing ideas related to understandings associated with a task and an opportunity, through discourse, revision, and sharing, to expand those ideas (Chuy, Scardamalia, & Bereiter, 2012; Scardamalia, 2002). Writing used as a tool for learning provides a mode for the intersection (integration) of personal connections to new ideas and a presentation to examine student understanding (Collins & Madigan, 2010; Ellis-Robinson, 2015; Misulis, 2009). The intersection of academic domains, including disciplinary thinking and writing, provides a nexus for awareness and development of social cognition for students with ASD. To effectively support students in the area of literacy, educators' approaches to engage students in reading and writing should reflect the discipline in which they are situated. For example, writing in social studies lends efficiency to the learning process by providing students with opportunities for practice of basic writing skills and development of social cognition without sacrificing time for content and discipline-specific literacy development (Bulgren et al., 2013; Ellis-Robinson).

Few studies have considered write-to-learn interventions, such as the use of poetry writing, to increase disciplinary literacy and social cognition, and no studies have used such interventions with students with ASD. Therefore, the purpose of this study was to explore how poetry writing can promote growth in social cognition, writing, and disciplinary literacy for students with ASD. The following research questions were explored in this study. First, what evidence of *social cognition*, including theory of mind ability and perspective taking, is apparent in instructional discourse and biopoems written in the context of social studies instruction for adolescents with ASD? Second, what evidence of important elements of *summary writing* is apparent in instructional discourse and biopoems written in the context of social studies instruction for adolescents with ASD? Third, what evidence of *disciplinary literacy*, including *substantive content* and *second-order procedures*, is apparent in instructional discourse and biopoems written in the context of social studies instruction for adolescents with ASD?

## METHOD

### Setting and participants

The study took place in a suburban middle school in the northeast United States that comprised 806 students, 3% of whom were African American, 72% White, 6% Hispanic/Latino, 15% Asian or Native Hawaiian/Other Pacific Islander, and 4% multiracial. One percent of students at the school were classified as English language learners, 11% were students with disabilities, and 13% were economically disadvantaged. The previous year's results for the state English Language Arts assessment were 8% performing at Level 1 (well below proficient), 26% at Level 2 (partially proficient), 34% at Level 3 (proficient), and 31% at Level 4 (above proficient).

Potential participants were invited by their special education teachers according to the following criteria: middle school student (Grades 6–8) with a documented diagnosis of ASD, who was working toward goals in the area of writing. Three seventh-grade students from multiple classrooms in an integrated program met the criteria and assented to participate in the study. The participants had been exposed to writing poetry previously in their schooling and were able to articulate some important facts about poetry (e.g., it often rhymed, had short lines). None of the participants reported any knowledge of biopoems in particular, however.

The first participant, Michael (all participants' names are pseudonyms), was a 13-year-old adolescent boy diagnosed with ASD. The most recent standard scores (mean of 100 and *SD* of 15) on the Clinical Evaluation of Language Fundamentals-5 (Wiig, Semel, & Secord, 2013) were an 82 in Core (Index), 85 in Expressive Language, 98 in Language Content, 83 in Language Memory, and 90 in Receptive Language. No IQ or writing-specific scores were reported for this participant. Michael was described as a hard worker by his teachers. He was able to write a clear and organized paper. In class, he struggled to support his claims with details and connect with his audience, including expanding ideas creatively. His writing goal was to independently revise his work for clarity, imagery, and cohesiveness, or request teacher support when necessary. He was encouraged to utilize a graphic organizer during the writing process. Michael had positive relationships with adults and peers. When given multiple or difficult tasks, he sometimes experienced anxiety. He received counseling and speech–language pathology services at the time of the study.

Susan was a 14-year-old adolescent girl with a diagnosis of ASD. Her most recent test scores on the Kaufman Test of Educational Achievement-II (Kaufman & Kaufman, 2004) were standard scores of 74 in Written Expression, 76 in Written Language, 80 in Spelling, 82 in Reading Composite, and 83 in Reading Comprehension. Susan received support in the general education setting in the areas of literacy, math, science, and social studies, as well as additional literacy instruction in the resource room. Susan was described as a focused learner who put forth her best effort. Given a writing prompt, she was able to write an organized piece. She was working on locating important information and expanding her ideas in writing and revising work prior to submission. Her goal was to revise her work for clarity with a focus on audience and purpose. Susan enjoyed reading and was conscientious about her work.

Steve was a 14-year-old adolescent boy with ASD and comorbid diagnoses of Attention Deficit Hyperactivity Disorder and Oppositional Defiant Disorder. Although writing scores were unavailable, composite standard scores reported on the Wechsler Individual Achievement Test-III (Wechsler, 2009) were a 98 in Reading Comprehension and Fluency, 100 in Total Mathematics, and 101 in Total Reading. He received the majority of his education in the general education setting with direct support from a special educator. According to teacher observations, writing was an area of struggle, particularly selecting and organizing details. With support, Steve would edit and revise his work. His writing goal

was to plan an organized response with all component parts and revise his work for grammar and spelling. Steve had positive relationships with peers. Although he had difficulty establishing friendships, he did have friends and often sought to connect with others. Steve could sometimes become defiant during a disagreement and was working on responding in an appropriate manner. At the time of the study, he received resource room and counseling services.

The instructor for the study was a special education doctoral student. She had a master's degree and certification in special education at the childhood and adolescent levels and had taught students with ASD and other disabilities at the middle and high school levels in resource room and self-contained special classes as a consultant teacher for 3 years before entering the doctoral program. She had no previous relationship with the students or the district in which the study was conducted.

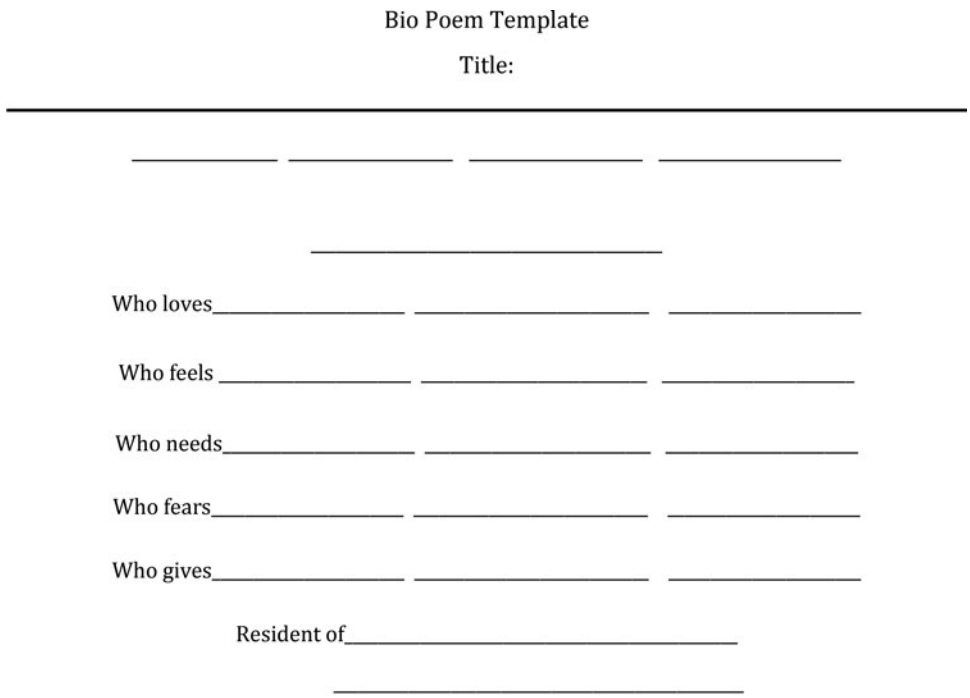
## Materials

Materials for this study consisted of a biopoem graphic organizer adapted by Ellis-Robinson (2015) on the basis of formulas used in previous studies (Gere, 1985; Haley & Huddleston, 2003; Webre, 2002). The biopoem format (see Figure 1) includes space for the individual's name and character traits, and what the person loves, feels, needs, fears, and gives to others (e.g., love, inspiration). Reading passages, one page accounts of people from history whom the researchers believed students in seventh grade and eighth grade in the United States should be somewhat familiar based on their curriculum, were taken from *Leveled Texts for Social Studies: American Biographies* (Housel, 2012). The passages were modified slightly to account for the students' level of vocabulary and reading fluency and to include facts that may be needed for the biopoems. Reading levels were confirmed with the students' teachers. A mobile phone was used to audio record instructional sessions for analysis.

## Procedures

Each student worked one-on-one with the instructor to learn what a biopoem is, its structure, and the general purpose of poetry, as well as the fact that poetry can be used both as a means of expression and as a way to summarize factual information. Six instructional sessions lasted for approximately 30 min each and were held in a quiet location outside the general classroom. The instructor worked with the students sequentially, completing all lessons with one student before beginning to work with the next student. Lessons consisted of participants reading a biographical passage, then using the organizer to write a biopoem, and comparing themselves to the historical figure. In Lesson 1 the instructor modeled writing a biopoem about herself on the basis of an autobiographical passage she had written; in Lesson 2, the teacher and the student wrote a biopoem together about the student; and in each lesson that followed, the student read a passage about a famous person in history (e.g., Abraham Lincoln) and wrote a biopoem about that person. In every lesson, the instructor modeled the process of highlighting information from the text, and then paraphrasing that important information and using carefully selected words to summarize the text. Throughout the process, she focused on the historical figure's potential feelings and thought processes. She prompted with questions and faded her scaffolding over time until the student was able to complete a biopoem independently. See Table 1 for an instructional sequence and sample prompts.

Throughout the lessons, the teacher was encouraged to follow the script and also to allow the student to lead the conversation and drive the lesson. She promoted the use of the biopoem structure and using facts from the text and also tried to encourage the students to be creative in their word choice and make connections beyond the text. Lessons were structured and predictable so that students would know what to expect, would become comfortable with the format of the lessons, and have multiple opportunities to practice the writing of a biopoem.




Line 1: First name or role

Line 2: Four Character traits

Line 3: Relative or name of family or ethnic group

Line 4: Who loves (name three things)

Line 5: Who feels (name three things)

Line 6: Who needs (name three things)

Line 7: Who fears (name three things)

Line 8: Who gives (name three things)

Line 9: Resident of (city or type of home)

Line 10: Last name or restatement of category

**Figure 1.** Biopoem template.

**Research design and analysis**

An interpretive qualitative content analysis of the six biopoems and the written transcripts of the six lessons was completed (Tindal & Hasboruck, 1991). Unfortunately due to a technological problem, part of the recording for Michael's third lesson was lost; therefore, data are missing from that lesson. Transcripts from instructional discourse and dialogic interactions were analyzed according

**Table 1.** Instructional sequence

| Lesson | Goal | Overview of Teaching Method and Activities | Example of Prompts Used |
|---|---|---|---|
| 1 | The student will discuss the importance of poetry and learn a new type of poetry called biopoem | Modeling; introducing graphic organizer template of the biopoem; reading paragraph describing teacher; read teacher biopoem | "Bio-poems are a type of poem where you describe a person or type of person. Bio-poems often talk about the person's feelings and accomplishments in life. They have a specific structure, but you can still be creative in your word choice."<br>"Bio-poems start with my first name, or type of person. My name is _____, so I'll write that on the first line." |
| 2 | The student will discover the structure/parts of a biopoem by writing one about himself/herself | Review parts of a biopoem; brainstorm important information about the student; collaboratively write a biopoem about the student; compare and contrast to the teacher's biopoem | "Today we are going to practice bio-poems by writing one about you. First, let's learn some things about you. Tell me what you like to do in your free time . . . . What job do you want to have in the future? What are some things you have accomplished?"<br>"Let's use what we brainstormed to write a bio-poem about you. Let's go line by line using the template we have here to guide our thinking." |
| 3 | The student and the teacher will collaboratively write a biopoem about an historical figure | Review parts of a biopoem; read passage about historical figure, with teacher prompts to highlight or underline important facts; collaboratively write biopoem about historical figure; compare/contrast to student's biopoem | "We just read many things about this person. Next, let's pick out some facts that are most important about their life. To help us find the information we're looking for, we can use the bio-poem structure."<br>"What was their job?/What important event are they a part of? What did they love? What might they have been afraid of?"<br>"First, let's use the important facts we found about this person in the text. We have underlined or highlighted them to make them easy to find. Next, we can use our graphic organizer to help us with the structure."<br>"How was _____'s life similar to yours? Different? Let's compare bio-poems." |

(*continues*)

**Table 1.** Instructional sequence (*Continued*)

| Lesson | Goal | Overview of Teaching Method and Activities | Example of Prompts Used |
|---|---|---|---|
| 4 | The student and the teacher will collaboratively write a biopoem about a historical figure | Review parts of a biopoem; read passage about historical figure, with teacher prompts to highlight or underline important facts; collaboratively write biopoem about historical figure; compare/contrast to student's biopoem and biopoem of previous day's historical figure | "Now that we've read about _____, what might help us prepare to write our bio-poem next lesson?"<br>"Now that we've read, we're ready to start writing. What information did we find that might be useful in our writing?"<br>"I see you underlined/highlighted _____. Where in our poem can we use that information?"<br>"What did we learn about _____'s life from writing this poem?" |
| 5 | The student will write a biopoem about an historical figure with minimal teacher support | Review parts of a biopoem; read passage about historical figure; teacher prompts to recall important facts; student writes biopoem about historical figure with minimal teacher support; compare/contrast to student's biopoem and biopoem of previous days' historical figure | "So far we've studied bio-poems, which can help us summarize important ideas about a person or type of person. We practiced by writing one about me, you, and important people in American history. You may or may not have learned about this person yet in Social Studies. Just like before, we can read to gather background knowledge on this person."<br>"Great job! I like how you found details that we've seen in a bio-poem." |
| 6 | The student will independently write a biopoem about a historical figure | Review parts of a biopoem; read passage about historical figure; teacher prompts to recall important facts; student writes biopoem about historical figure independently; compare/contrast to student's biopoem and biopoem of previous days' historical figure | "We have also learned how to write a bio-poem. Remember, a bio-poem summarizes big ideas. The author (you!) makes specific choices about which words will best describe the person or type of person. So far, we've written about me, you, and one historical figure in American history. Now it's your turn to write a bio-poem by yourself."<br>"Using the information in this passage and your graphic organizer, write a bio-poem about _____." |

to frameworks developed from social studies standards, extant research, and theoretical frameworks related to each research question (see coding description below for specific information). Although analytic frameworks have varied in the research of classroom discourse, similar frames have been created and used for analysis (Elizabeth et al., 2012). The researchers worked collaboratively to create a three-prong inquiry examining interactive instructional discourse to build understanding through teacher modeling, dialogue, and responsive teacher questions to promote growth in the development of distinct categories of proficiency: social cognition, summary writing, and disciplinary understanding in social studies. Examination of targets of learning in both products of learning (biopoems) and the process of composition in lessons (instructional discourse including dialogic interactions) allowed insight into understandings that might be less directly understood when examining products alone. The intersection of these three categories provided a point of entry for efficient research to address social/emotional and academic learning simultaneously.

The qualitative design began with the dynamic development of a three-domain coding manual (see Table 2), completed using a collaborative research approach and deductive category application (Mayring, 2000, 2014). Researchers examined the seminal research and educational standards related to each area of interest and created codes and subcodes on the basis of the theoretical definitions evident in the literature (Elizabeth et al., 2012; Ellis-Robinson, 2015; Mayring, 2014). These were collected in a coding agenda and applied to the data. After discussion and clarification among the three researchers for a formative check of the reliability of the codes, the categories were revised and codes refined.

Codes were subsequently applied to the data and a final summative check of the reliability of the codes was completed through a constant comparative analysis by the three researchers of all coding and field notes created (Mayring, 2000). Through this process, explicit definitions and examples in the data were used to clarify the exact circumstances for coding of phrases and words in each category. The unit of analysis for coding was meaningful words/combinations of words as they applied to specific concepts or procedures. Each researcher took one area of focus and checked for confirmability during two passes of the data in which the individual codes and categories assigned were compared with those of fellow researchers' until 100% agreement was reached (Brantlinger, Jimenez, Klingner, Pugach, & Richardson, 2005). Recombination of codes and categories were employed as necessary. Once agreement of definitions and codes was reached for 30% of the data, each researcher used exemplar codes to apply to the remaining data.

Codes for social cognition were created to reflect the teacher's or learner's engagement in discussion relevant to social cognition, or theory of mind, based on research in the area (Happé, Cook, & Bird, 2016; Schaafsma, Plaff, Spunt, & Adolphs, 2015). Expressions and recognitions were considered separate, as understanding of one's own beliefs and emotions may differ from the perception and understanding of others'. Perspective-taking was limited to instances in which it was clear and overt that the persons were placing themselves in someone else's situation in terms of thought or action. The remaining codes (thought influences action and action influences thought) were created to capture similar types of reasoning.

Codes for examining elements of summary writing were created by conducting a search in the theoretical and research literature in writing to ascertain the key components of summary writing. The search revealed broad categories in these areas that might be applied to understand the current study (e.g., Benzer, Sefer, Oren, & Konuk, 2016; Hood, 2008; Saddler, Asaro-Saddler, Moeyaert, & Ellis-Robinson, 2017; Troia, 2014; Westby, Culatta, Lawrence, & Hall-Kenyon, 2010). Important themes that emerged from the review and were used for codes were main idea, details, paraphrasing, organization

**Table 2.** Codes for the three research questions

| | Code | Description | Example |
|---|---|---|---|
| I. Social cognition | | | |
| | Expression of belief | An expression of belief is statement, including (but not limited to): what the person knows, imagines, wonders, understands, thinks, or remembers. | S: "I mean what was up with back then, like literally, I mean in World War II they gave African Americans rights in World War II, now they're not allowed to have any rights? *That's messed up, they should make up their mind.*" |
| | Recognition of belief | A recognition of belief is a statement that reflects consideration of the above. For example, Amelia Earhart believed that women could be pilots too. | T: "Some people believed women couldn't do the same things as men." |
| | Expression of emotion | An expression of emotion is a statement including (but not limited to): what the person cares about, wishes/wants, or feels (i.e., angry, happy, scared, or worried) | S: "Sometimes I try to overcome my fears. I used to be afraid of the dark." |
| | Recognition of emotion | A recognition of emotion is a statement that reflects consideration of the above. For example, "You enjoy being a teacher because you care about your students." | T: "She was afraid she wouldn't get a chance to be a pilot." |
| | Perspective-taking | Perspective-taking was coded when statements were made that indicated that the student or the teacher was attempting to think or interpret from another's point of view. For example, "if that were me, then I would . . . " or "If that were you, I think you would . . . " or similar. | S: "She was a nurse in the war . . . so many girls don't get to be in the war." |
| | Thought influences action | Reasoning about how thought influences action was coded when the student or the teacher made a statement that explained how what a person believes impacts how he or she acts, or the choices he or she makes. | T: "She reunited families. So family was important to her, right?" |
| | Action influences thought | Opposite this was a code for how action influences thought, which occurred when statements were made focusing on how a person's choice or behavior impacts what he or she thinks or feels. | T: "How would you feel?"<br>S: "Like unfair and the way they took away Jews' rights." |

(*continues*)

**Table 2.** Codes for the three research questions (*Continued*)

| Code | | Description | Example |
|---|---|---|---|
| II. Summary writing | | | |
| | Main idea | Writing about the topic or getting the gist | S: "This reading was mostly about Neil Armstrong." |
| | Details | Including essential information, relevant content, important facts, or support for main idea | S: "George Washington was our first president." |
| | Paraphrase | Using writer's own words, rewording, or substituting | T: "They used the word brave, what is another way you can say that?" S: "Courageous." |
| | Organize | Synthesizing; combining or integrating ideas; rearranging, reordering, or manipulating text | T: "They never found the plane, they haven't found anything."<br>S: "Not even the body?" |
| | Rewrite/Restate | Restating or reiterating | S: "The text says she was pre-med." |
| | Shorten | Reducing, condensing, or deleting | S: "I'll just write intel for short" (for intelligence) |
| | Comprehend | Checking for understanding | T: "Yep, he was gifted."<br>S: "What does gifted mean?" |
| | Analyzing | Determining important from unimportant facts or interpreting text | T: "What kind of feelings might war give Clara?"<br>S: "Um, being scared"<br>T: "What makes you say that?"<br>S: It says, "The horrors of war." |
| | Summarize (Sum) | Summing or producing a summary | T: "What is a biography?"<br>S: It is about a person's life."<br>(Completed biopoems also counted as summaries.) |
| | Highlight | Using a highlighter or marking; verbally pointing out | S: "Yes, it says so right here (pointing to text)." |

(*continues*)

**Table 2.** Codes for the three research questions (*Continued*)

| Categories | Code | Description | Examples From Study |
|---|---|---|---|
| III. Disciplinary literacy | | | |
| *Substantive content* | Human agency | The capacity of individuals to act independently and make choices | T: "I used to play music with my friends so that's definitely something that I like to do."<br>S: (referring to granting equal rights to all people) "They messed up, they should make up their minds." |
| | Historical context | Ideas from history situation in appropriate time frames | T: "We are going to use a special kind of poem to learn about people in American History."<br>S: (in response to what happened between the British and colonies) "Boston Massacre" |
| | Historical concepts | Ideas from history, substantive facts/declarative knowledge and procedural concepts | T: "She was from Kansas." "bio-poem structure"<br>S: "Atlantic Ocean" |
| | Warrants and evidence | Ideas from history, substantive facts/declarative knowledge, and procedural concepts | T: "Use a lot of descriptive words to describe whether they are talking about a place, person, an event."<br>S: (within dialogic exchange teacher asked "What's something a teacher gives her students?") "Music . . . Books." |
| *Second-order ideas* | | | |
| Procedural/ discipline tools | Change/continuity | Change in society among people or maintenance of the status quo | T: (regarding Amelia Earhart) " . . . Before that women didn't think they could do those things."<br>S: "She's the first woman." |
| | Causation | What causes events to occur | T: " . . . you could put overprotective because you listed that tat the top as something you feel when it comes to your brother."<br>S: " . . . we should only have presidents instead of kings because sometimes kings lead to bad choices." |
| | Claims | Arguments and thesis statement | T: (used for modeled claims and prompts for claims) "What was the result?"<br>S: (in response to "How do you think he felt when he became president?") "Happy?" |

(*continues*)

**Table 2.** Codes for the three research questions (*Continued*)

| Categories | Code | Description | Examples From Study |
|---|---|---|---|
| | Interpretive process | 1. Build a mental map<br>2. Refine the map as evidentiary sources are consulted<br>3. Use imagination to fill in gaps in context<br>4. Sketch out an argument<br>5. Use evidence to address questions | T: "We're going to read first and gather background knowledge about the person we're going to be writing about."<br>S: (in response to prompt, "What are some ways to describe Amelia Earhart?") "She loves planes . . . and she loves flying.<br>(in response to "What kind of person can we say Amelia is based on this?")<br>"Bravery . . . courageous" |
| | Intertextuality | Combining information from different sources | T: "Is there anything different between you and I based on my bio-poem?"<br>S: "Well I don't play the keyboard." |
| Prior knowledge and experience | Sociocultural anchors | Bias and personal connections based on prior experience | T: "What are some things you love?"<br>S: "I love my little dog" |
| | Temporal anchors | Bias evidence of current era influencing perspective or interpretation | T: ". . . many people thought that only men had what it takes to fly."<br>S: "Not cool . . . because women can be pilots too." |
| | Imagination | Perspective-taking, creative theories | T: "What is your thinking behind that one [referring to word choice]<br>S: "I realized, we actually are still in the Iraq War." |
| | Historical significance | Questions connected to what they know and what they need to know. Judgments and investigations. Details that the overarching connection to historical concepts and context | T: "What was the famous document that he created that freed the slaves?"<br>S: (responding to prompt asking about important facts about Clara Barton.)<br>"She founded the American Red Cross." |

*Note*. S = student; T = teacher.

(e.g., synthesize, combine, rearrange, sequence), rewriting/restating, shortening, comprehension (checking for understanding), analysis (e.g., differentiating important from unimportant information, interpreting text), summarizing, and highlighting.

Codes to examine social studies understandings were derived from a previous study of biopoems used in middle school social studies instruction (Ellis-Robinson, 2015), in which codes were developed from key social studies literature examining historical understanding and disciplinary literacy components in social studies (Common Core State Initiative, 2012; Gersten, Baker, Smith-Johnson, Dimino, & Peterson, 2006; Levstik, 2000; Monte-Sano, 2012; Monte-Sano & De LaPaz, 2012; National Council for the Social Studies [NCSS], 1994, 2010). According to that analysis, two overarching categories of disciplinary literacy in social studies are (a) substantive content, which included declarative facts, vocabulary, and beliefs regarding history, and (b) second-order ideas or procedural components of social studies (Nystrand, Gamoran, & Carbonaro, 1998; Rudnitsky, 2013), including both prior knowledge and disciplinary tools for analysis, involving skills such as identifying causality, perspective-taking, and identification of historical significance necessary for the interpretation and development of claims related to history and society (Lee & Ashby, 2000).

### *Trustworthiness*

To establish the trustworthiness of the qualitative analysis, four reliability criteria were considered: credibility, transferability, confirmability, and dependability (Lincoln & Guba, 1985). Credibility was established through the use of three types of triangulation: source triangulation, through the analysis of three students and sets of interactions across each of the participants; analyst triangulation, through the collaborative review of findings by three researchers; and theoretical triangulation, through the three domain lenses of examination. In addition, the use of thick description promotes the credibility of the current study as it conveys the actual classroom interactions and context that can provide readers with insight regarding the processes of learning (Brantlinger et al., 2005; Shenton, 2004). Transferability is evident in the derivation of codes from both theoretical and empirical studies where experts have agreed on key skills and understanding in social cognition, writing, and social studies. In the examination of findings of this study, key details of the setting and participants have been shared (Shenton). Confirmability was established through an audit trail, including a narrative record of the process of data collection and analysis, and interpretation in individual and group process field notes to provide a rationale developed throughout the research process (Shenton). Dependability and confirmability can be established through explicit reporting and detail of the research process to be understood and scrutinized by readers. For that reason, key elements in this article include the research design and how it was implemented, the details of data gathering, and reflective appraisal of the process (Shenton). The research design diagram of the code derivation process via deductive category application (Mayring, 2000) is an example of these processes (see Figure 2). Our code development and application is presented in Figure 3.

### Treatment fidelity

To assess the extent to which instruction was delivered with fidelity, each lesson was scripted, with space provided for the instructor to check off each step as it was taught during the lesson. Then, transcripts for each of the lessons were reviewed at the end of the intervention by the third author, who listened to the instruction and followed along with a copy of the script to ensure that the lesson steps were followed. Nearly one hundred percent (99.7%) of the steps were followed according to the lesson scripts; only one step from one lesson was not present.

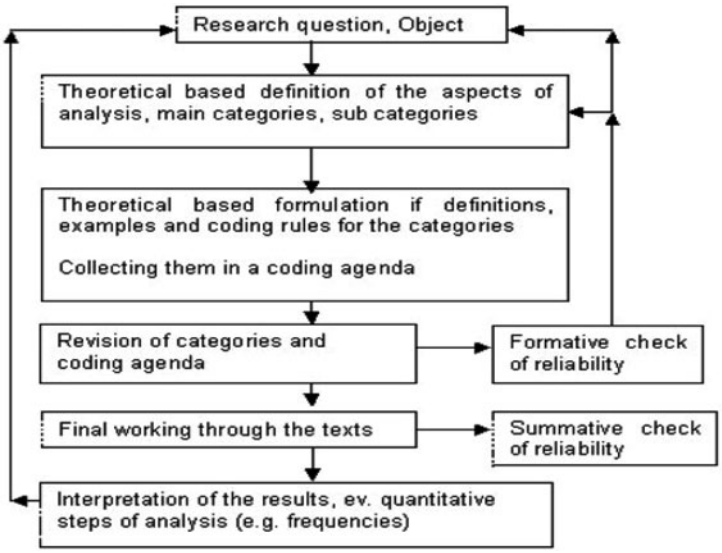



**Figure 2.** Deductive category application (Mayring, 2000). Retrieved from http://www.qualitative research.net/index.php/fqs/article/view/1089/2385

## FINDINGS

For each research question, themes that emerged most often from the data in the instructional discourse between instructor and student from the lessons are discussed, with percentages of the codes for each lesson provided. This is followed by an overall analysis of codes in the biopoems. Frequency tables are also provided for each research question, separated by student and instructor for each lesson, and for the biopoems.

### Research Question 1—social cognition

Writing the biopoem supported the students to develop an approach to reasoning about mental states. Each lesson afforded opportunities to express or recognize beliefs and emotions in oneself or others and to discuss how thought influences action and vice versa. Findings show that the values were generally highest across all codes when the lesson was focused on modeling writing the biopoem; this lesson appears to have elicited the most dialogue between teacher and student.

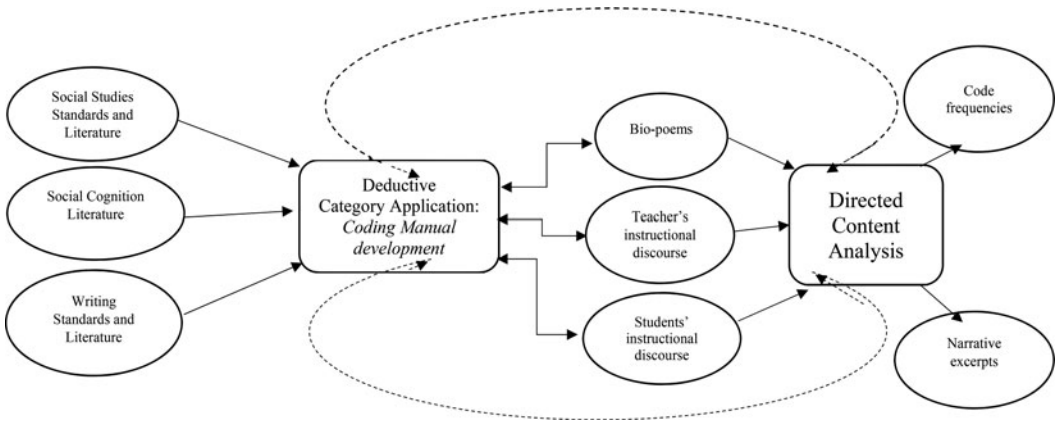



**Figure 3.** Code development and application. Retrieved from http://www.qualitativeresearch.net/index.php/fqs/article/view/1089/2385

Although the teacher's level of support generally decreased with each lesson, the students were still able to engage in similar reasoning while independently writing biopoems. Frequencies of the codes for Research Question 1 are provided in Table 3.

## Instructional discourse

### *Expression versus recognition*

Instruction in biopoem writing engaged participants in expressing and recognizing thoughts and feelings (see Table 3). Although expressions of belief occurred often in lessons with Michael, Susan, and Steve (31%, 36%, and 29% of all coded concepts, respectively), recognitions occurred less (24%, 22%, and 14%). Statements of recognition were made more often by the teacher than by students. Given the dynamic of instructional discourse, this is not surprising. Through recognitions of what was said by the student or read in the text, the teacher modeled perspective-taking and other ways to relate through belief and emotion to another person—in this case, each other or the historical figure. For example, when working with Susan on her biopoem, the teacher stated, "You seem to be a very empathetic, caring person and in my poem, I talk about being a teacher and liking to work with kids . . . do you think maybe I'm a caring person? That's something we have in common." The teacher also often repeated and affirmed what the student was saying or prompted a different line of thought. For example, when discussing Abraham Lincoln, Steve suggests "he feared like bringing the states back together." The teacher extended this and asked, "What might happen when they all come back together?" to prompt the student to think about beliefs on a larger scale.

### *Belief versus emotion*

The elements of a biopoem prompted the learner to consider beliefs and emotions. Instructional discourse throughout the lessons included a larger focus on belief than emotion (see Table 3). The analysis showed that students were more apt to discuss what they or others knew or believed. Expressions or recognitions of belief comprised 56% of all coded concepts for Michael, 59% for Susan, and 43% for Steve. Discourse focused on emotion, however, accounted for far less (26%, 26%, and 31%, respectively).

Writing the biopoems appeared to provide an opportunity for participants to explore their own emotions. For example, with Michael, the teacher prompted him with emotion words ("Have you ever felt sad?"); however, his use of the word was not always consistent with the teacher's expectation ("No, I haven't ever been sad"). Still, he was able to perceive and accurately label others' emotions when asked directly. In Lesson 4, when asked, "What kinds of feelings do you think he had?" Michael responded that the person would have felt sad. In this way, biopoem writing engaged students in thinking about what others feel. At times, students also responded to share an emotion but were quick to revise their response if they believed their answer was not what the teacher was looking for. The teacher often asked the students to explain their thinking, especially around words referring to emotion.

Beyond thinking about emotions in general, writing the biopoem also highlighted the nuanced differences between feelings, which supported the students' developing understanding of the depth and breadth of human emotion and how it is connected to experience. When writing about someone other than themselves, all participants were able to recognize an emotion at least one time per lesson. As the lessons progressed, a general increase began to emerge; however, as writing became more independent (Lessons 5–6), it was not coded as frequently. A similar drift was observed with expressions of belief.

Despite overall trends, slight differences between participants were evident. Overall, expressions of emotions were noted more often in lessons with Steve (14%) than lessons with Susan (10%) or Michael (9%); however, he made fewer expressions of beliefs. Furthermore, fewer statements recognizing others' emotions were noted in

**Table 3.** Frequencies of codes for Research Question 1 (social cognition)

| | EB | RB | EE | RE | TA | AT | P | Total |
|---|---|---|---|---|---|---|---|---|
| *Lesson data* | | | | | | | | |
| Michael | | | | | | | | |
| Lesson 5—T | 20 | 15 | 23 | 12 | 3 | 11 | 8 | 92 |
| Lesson 5—S | 15 | 1 | 2 | 15 | 0 | 3 | 6 | 42 |
| Lesson 6—T | 35 | 24 | 9 | 36 | 5 | 4 | 16 | 129 |
| Lesson 6—S | 27 | 5 | 14 | 6 | 0 | 0 | 7 | 59 |
| Lesson 8—T[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lesson 8—S[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lesson 9—T | 38 | 51 | 1 | 28 | 1 | 5 | 17 | 141 |
| Lesson 9—S | 39 | 3 | 4 | 12 | 1 | 0 | 8 | 67 |
| Lesson 10—T | 22 | 48 | 0 | 22 | 1 | 5 | 10 | 108 |
| Lesson 10—S | 25 | 4 | 2 | 10 | 1 | 1 | 5 | 48 |
| Lesson 11—T | 16 | 44 | 0 | 10 | 1 | 9 | 16 | 96 |
| Lesson 11—S | 27 | 6 | 2 | 6 | 2 | 0 | 8 | 51 |
| Total: | 264 | 201 | 57 | 157 | 15 | 38 | 101 | 833 |
| Susan | | | | | | | | |
| Lesson 4—T | 6 | 10 | 8 | 11 | 4 | 2 | 4 | 45 |
| Lesson 4—S | 17 | 3 | 1 | 5 | 0 | 0 | 0 | 26 |
| Lesson 5—T | 31 | 19 | 5 | 39 | 0 | 2 | 9 | 105 |
| Lesson 5—S | 18 | 2 | 18 | 0 | 0 | 1 | 3 | 42 |
| Lesson 6—T | 41 | 31 | 2 | 37 | 14 | 8 | 15 | 148 |
| Lesson 6—S | 36 | 9 | 3 | 10 | 5 | 1 | 11 | 75 |
| Lesson 7—T | 21 | 33 | 2 | 11 | 1 | 3 | 6 | 77 |
| Lesson 7—S | 34 | 4 | 2 | 13 | 2 | 5 | 3 | 63 |
| Lesson 8—T | 16 | 23 | 0 | 2 | 0 | 0 | 1 | 42 |
| Lesson 8—S | 18 | 9 | 0 | 4 | 0 | 0 | 2 | 33 |
| Lesson 9—T | 17 | 21 | 1 | 13 | 0 | 1 | 7 | 60 |
| Lesson 9—S | 12 | 1 | 2 | 1 | 0 | 0 | 3 | 19 |
| Total | 267 | 165 | 44 | 146 | 26 | 23 | 64 | 735 |
| Steve | | | | | | | | |
| Lesson 5—T | 29 | 6 | 17 | 3 | 0 | 1 | 2 | 58 |
| Lesson 5—S | 11 | 4 | 1 | 10 | 4 | 0 | 4 | 34 |
| Lesson 6—T | 30 | 15 | 11 | 28 | 4 | 2 | 8 | 98 |
| Lesson 6—S | 18 | 0 | 22 | 3 | 0 | 0 | 1 | 44 |
| Lesson 7—T | 23 | 23 | 0 | 27 | 5 | 6 | 13 | 97 |
| Lesson 7—S | 28 | 8 | 6 | 11 | 4 | 2 | 16 | 75 |
| Lesson 8—T | 16 | 17 | 1 | 21 | 9 | 10 | 13 | 87 |
| Lesson 8—S | 10 | 6 | 3 | 8 | 1 | 1 | 7 | 36 |
| Lesson 9—T | 12 | 7 | 2 | 20 | 8 | 1 | 19 | 69 |
| Lesson 9—S | 8 | 4 | 2 | 6 | 4 | 0 | 5 | 29 |
| Lesson 10—T | 45 | 30 | 2 | 53 | 16 | 14 | 17 | 177 |
| Lesson 10—S | 37 | 6 | 10 | 16 | 5 | 9 | 22 | 105 |
| Total | 267 | 126 | 77 | 206 | 60 | 46 | 127 | 909 |

(*continues*)

**Table 3.** Frequencies of codes for Research Question 1 (social cognition) (*Continued*)

| | EB | RB | EE | RE | TA | AT | P | Total |
|---|---|---|---|---|---|---|---|---|
| *Biopoem data* | | | | | | | | |
| Michael | | | | | | | | |
| Poem L6 | 8 | 0 | 0 | 16 | 4 | 0 | 8 | 36 |
| Poem L7 | 8 | 0 | 16 | 0 | 2 | 0 | 0 | 26 |
| Poem L8 | 5 | 0 | 0 | 16 | 3 | 0 | 10 | 34 |
| Poem L9 | 5 | 0 | 0 | 16 | 2 | 0 | 7 | 30 |
| Poem L10 | 6 | 1 | 0 | 16 | 0 | 1 | 11 | 35 |
| Poem L11 | 7 | 0 | 0 | 16 | 2 | 0 | 11 | 36 |
| Total | 39 | 1 | 16 | 80 | 13 | 1 | 47 | 197 |
| Susan | | | | | | | | |
| Poem L4 | 8 | 0 | 0 | 12 | 5 | 3 | 10 | 38 |
| Poem L5 | 8 | 0 | 12 | 0 | 6 | 3 | 0 | 29 |
| Poem L6 | 6 | 0 | 1 | 9 | 3 | 3 | 6 | 28 |
| Poem L7 | 9 | 0 | 0 | 16 | 8 | 8 | 11 | 52 |
| Poem L8 | 7 | 0 | 0 | 16 | 4 | 4 | 7 | 38 |
| Poem L9 | 6 | 0 | 0 | 16 | 3 | 4 | 12 | 41 |
| Total | 44 | 0 | 13 | 69 | 29 | 25 | 46 | 226 |
| Steve | | | | | | | | |
| Poem L5 | 7 | 0 | 0 | 17 | 6 | 2 | 14 | 46 |
| Poem L6 | 8 | 0 | 16 | 0 | 2 | 5 | 0 | 31 |
| Poem L7 | 7 | 1 | 0 | 17 | 3 | 8 | 12 | 48 |
| Poem L8 | 6 | 0 | 0 | 16 | 2 | 5 | 10 | 39 |
| Poem L9 | 7 | 0 | 0 | 16 | 2 | 8 | 11 | 44 |
| Poem L10 | 6 | 1 | 0 | 16 | 4 | 6 | 11 | 44 |
| Total | 41 | 2 | 16 | 82 | 19 | 34 | 58 | 252 |

*Note*. AT = reasoning about how action influences thought; EB = expression of belief; EE = expression of emotion; P = perspective taking; RB = recognition of belief; RE = recognition of emotion; S = student; T = teacher; TA = reasoning about how thought influences action.
[a]Data missing.

lessons with Susan (13%) than lessons with Steve (17%) or Michael (18%). As the lessons progressed, students differed in their level of independence and need for teacher support. For example, when prompted by the teacher, Susan's thinking was more internal; she stated to the teacher, "I got this." Thus, learning and communication styles, as well as instructional support needs, may influence the frequency of these codes.

Certain lessons in the sequence prompted students to be more expressive. For example, Michael showed the most success in Lesson 2 (writing about himself) and Lesson 4 (Amelia Earhart). Susan best demonstrated her understanding of beliefs, emotions, and perspective-taking in Lesson 3, in which she wrote about Amelia Earhart. Steve was particularly engaged during Lesson 6, writing about Dr. Martin Luther King, Jr. Although participants responded differently to each lesson, it is evident that background knowledge and interest facilitated reasoning about mental states.

### *Perspective-taking*

Participants appeared to connect that the point of writing the biopoem was to gain perspective, with Michael, Susan, and Steve engaging in instructional discourse around perspective-taking in 12%, 9%, and 14% of all coded concepts, respectively. This was

evident in Michael's verbalized understanding of the purpose of the biopoem, stating that it was "about how it feels to be in someone's life." All but one lesson across participants included some form of perspective-taking by the student. Conversations around perspective-taking occurred more often during lessons focused on historical figures. Being clearly asked to take a perspective yielded better results in earlier lessons. For example, when asked "What else might she feel?" Susan described her reasoning: "Enthusiastic . . . she improvised a business that can help people in natural disasters." Michael and Steve engaged in more basic reasoning about the relationship between thought and action. For example, when discussing the teacher's biography, Michael said, "You always like to teach your students, so it makes you feel happy." The section of the biopoem related to what the individual "gives" was valuable in building understanding that the students had much in common with people throughout American history. For example, Susan was able to make connections between the work of a historical figure and what she would like to do currently to support her community.

### *Self-concept*

The biopoem process also provided opportunities for the student to be introspective. In this way, the biopoem can prompt the further development of self-concept. For example, in Lesson 1, Susan demonstrated that caring about others is important to her. When asked "What are some things you like to give?" she answered, "Maybe empathy." When asked to whom she would give empathy, she responded "Probably people that are really sad." Writing the biopoem also encouraged the participants to examine what was important to them. For example, when asked why one group would not want another to have rights, Steve answered, "I don't know, that just sounds wrong." The teacher replied with, "Why does it sound wrong?" and Steve responded, "Because we're all the same people." At the end of the lesson, he was prompted to reflect on the question: "How would you feel if this happened to you?" His response was "unfair" and "angry." While writing a biopoem about himself, Michael was asked about what career he was interested. He responded, "Be an inventor, of course!" A developing theory of mind is evident in these examples, as participants were able to engage in mental state attribution and show an understanding of what they think or feel. In addition, these interactions indicate a reflection on norms and values, which are shaped by beliefs and emotions and enacted through behavior. The teacher and the students were able to discuss a variety of abstract concepts as well, such as equality, culture, gender roles, and identity. The teacher was able to unpack these larger ideas related to social knowledge and scaffold the students' understanding.

### *Reciprocity*

The process of writing a biopoem provided opportunities for the student to engage in reciprocal conversations with the teacher. The structure encouraged discussion of topics such as hobbies, instruments, and asking about one another's family or pets. This provided a chance for the teacher to get to know the student and use this to inform instruction. For example, when writing her biopoem, Susan and the teacher shared experiences of owning pets. When discussing hobbies, Steve asked the teacher about musical instruments, including "Have you ever thought of being in a band?" and shared about experiencing stage fright. Michael was surprised to learn characteristics about the teacher that he also shared. Although reciprocity was not coded directly, expressions of belief and emotion were not vastly different between teacher and student. This indicates that biopoem writing allows the student to participate and engage in balanced conversations with others, a skill targeted by many social skills programs for children with ASD (White, Keonig, & Scahill, 2007).

## Biopoems

The biopoem structure encouraged the students to reflect on mental states of

themselves and others. During poem writing, participants were prompted to consider aspects of the historical figure such as what they love, feel, need, and fear. Participants also imagined how they would characterize the individual, or what their contribution throughout history had been. Details such as those described previously require students to use the information in the text, as well as their background knowledge, to take the perspective of the historical figure. To complete the poem, participants also must engage in thinking on how the actions and experiences of these individuals are rooted in their beliefs and emotions, as well as how those beliefs and values are shaped by the significant events of their lives. In addition, when writing the poem about themselves, participants were also engaged in thinking about how to creatively and accurately express their own emotions and beliefs, and how these have been shaped by their life experiences.

Recognitions of emotion were coded most frequently in the biopoem products. This was not surprising, given that nearly half of the poem comprised lines regarding the individual's emotions. Next, perspective-taking was also frequently coded. Participants' selections for words to include were based on their analysis and were reflective of the inferences drawn about the individual after reading their short biography. Perspective-taking was a necessary step if the student extended beyond the details as they appear in the text. Finally, expressions of belief occurred often. The beginning of the biopoem includes four traits; as a result, this was an area of the poem where the students expressed beliefs about the individual and their core characteristics. The least occurring code in the biopoems was recognitions of beliefs. Evidence of this was certainly prominent in conversations with the teacher. However, students did not incorporate these beliefs into their poem—perhaps because the structure did not clearly indicate for them to do so. Little variability was seen between participants, likely due to the formulaic nature of the biopoem structure. Each student was able to complete the biopoem fully and accurately and thus represented similar trends across codes.

### Research Question 2—elements of summary writing

Frequencies of the codes for Research Question 2 are provided in Table 4. Themes that emerged most frequently in response to the evidence of written expression in the instructional discourse of the lessons are presented; among these themes was brainstorming before writing, word choice, poetry as summary writing, and use of the biopoem structure to guide the writing process. A summary of the data found when analyzing the biopoems follows.

### Instructional discourse

#### *Brainstorming or collecting facts before writing*

Brainstorming was identified and expressed to students as an important part of the writing process. When modeling how to write a biopoem, the teacher said, "I'm writing some stuff to make it easier for us to find later." For each lesson, she encouraged the students to use a highlighter or underline important information from the reading passage that could be used to write the biopoem. The notes were then referred to whenever the student struggled to find a word to use in his or her poem. For example, when Steve could not identify something that Dr. Martin Luther King loves, the teacher said, "You underlined a bunch of things here, what do you think he might have loved?" Steve went back into the text and found that he had highlighted, "African American rights," and identified this as something Dr. King must have loved. At times the teacher guided students on how to find important information. For example, she prompted by saying, "What sort of details are we going to look for?" or more directly, "Focus on this section." Students were noted to engage in highlighting when they responded to a prompt by highlighting a particular detail. For example, when asked some character traits of the instructor, Michael (9% of coded concepts), looked back

**Table 4.** Frequencies of codes for Research Question 2 (summary writing)

| | MI | D | P | O | R | Sh | C | A | Sum | H | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Lesson data* | | | | | | | | | | | |
| Michael | | | | | | | | | | | |
| Lesson 5—T | 9 | 89 | 8 | 45 | 30 | 0 | 36 | 48 | 13 | 37 | 315 |
| Lesson 5—S | 1 | 33 | 7 | 1 | 11 | 0 | 0 | 19 | 3 | 8 | 83 |
| Lesson 6—T | 7 | 88 | 16 | 6 | 37 | 0 | 51 | 73 | 8 | 6 | 292 |
| Lesson 6—S | 1 | 74 | 4 | 2 | 21 | 0 | 4 | 41 | 3 | 4 | 154 |
| Lesson 8—T[a] | 2 | 2 | 0 | 4 | 0 | 0 | 0 | 2 | 3 | 3 | 16 |
| Lesson 8—S[a] | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Lesson 9—T | 3 | 66 | 21 | 7 | 37 | 0 | 50 | 92 | 5 | 32 | 313 |
| Lesson 9—S | 0 | 60 | 4 | 0 | 15 | 0 | 3 | 54 | 1 | 15 | 152 |
| Lesson 10—T | 2 | 55 | 12 | 26 | 21 | 0 | 48 | 68 | 5 | 26 | 263 |
| Lesson 10—S | 1 | 41 | 5 | 1 | 3 | 0 | 1 | 41 | 2 | 11 | 106 |
| Lesson 11—T | 3 | 21 | 10 | 13 | 8 | 0 | 51 | 62 | 3 | 20 | 191 |
| Lesson 11—S | 0 | 57 | 2 | 2 | 4 | 0 | 2 | 50 | 1 | 15 | 133 |
| Total | 30 | 586 | 89 | 107 | 187 | 0 | 246 | 550 | 47 | 177 | 2019 |
| Susan | | | | | | | | | | | |
| Lesson 4—T | 4 | 110 | 9 | 18 | 31 | 0 | 38 | 51 | 9 | 29 | 299 |
| Lesson 4—S | 0 | 26 | 1 | 0 | 7 | 0 | 0 | 26 | 1 | 11 | 72 |
| Lesson 5—T | 3 | 94 | 8 | 10 | 37 | 0 | 17 | 81 | 5 | 11 | 266 |
| Lesson 5—S | 0 | 28 | 0 | 0 | 4 | 0 | 0 | 34 | 1 | 3 | 70 |
| Lesson 6—T | 6 | 72 | 9 | 23 | 50 | 0 | 51 | 82 | 8 | 29 | 330 |
| Lesson 6—S | 2 | 42 | 3 | 1 | 15 | 0 | 0 | 24 | 1 | 19 | 107 |
| Lesson 7—T | 3 | 42 | 12 | 13 | 22 | 0 | 23 | 55 | 4 | 15 | 189 |
| Lesson 7—S | 0 | 49 | 0 | 1 | 2 | 0 | 0 | 36 | 1 | 11 | 100 |
| Lesson 8—T | 6 | 34 | 6 | 10 | 9 | 0 | 26 | 38 | 7 | 10 | 146 |
| Lesson 8—S | 0 | 26 | 1 | 0 | 5 | 0 | 0 | 19 | 1 | 11 | 63 |
| Lesson 9—T | 4 | 93 | 4 | 10 | 16 | 0 | 21 | 42 | 5 | 16 | 211 |
| Lesson 9—S | 1 | 35 | 0 | 1 | 4 | 0 | 1 | 15 | 2 | 7 | 66 |
| Total | 29 | 651 | 53 | 87 | 202 | 0 | 177 | 503 | 45 | 172 | 1919 |
| Steve | | | | | | | | | | | |
| Lesson 5—T | 5 | 127 | 15 | 25 | 40 | 0 | 46 | 51 | 8 | 16 | 333 |
| Lesson 5—S | 0 | 48 | 4 | 5 | 13 | 0 | 4 | 34 | 1 | 18 | 127 |
| Lesson 6—T | 4 | 69 | 12 | 10 | 68 | 0 | 38 | 54 | 5 | 15 | 275 |
| Lesson 6—S | 0 | 47 | 3 | 1 | 9 | 0 | 1 | 40 | 1 | 10 | 112 |
| Lesson 7—T | 5 | 50 | 23 | 17 | 45 | 0 | 61 | 75 | 12 | 23 | 311 |
| Lesson 7—S | 2 | 80 | 9 | | 36 | 2 | 5 | 58 | 2 | 28 | 222 |
| Lesson 8—T | 2 | 64 | 13 | 17 | 47 | 0 | 40 | 83 | 6 | 33 | 305 |
| Lesson 8—S | 0 | 43 | 1 | 0 | 20 | 0 | 1 | 35 | 2 | 20 | 122 |
| Lesson 9—T | 4 | 80 | 12 | 10 | 50 | 0 | 57 | 86 | 6 | 24 | 329 |
| Lesson 9—S | 1 | 47 | 5 | 0 | 12 | 0 | 0 | 26 | 0 | 20 | 111 |
| Lesson 10—T | 3 | 107 | 16 | 18 | 74 | 0 | 56 | 94 | 9 | 51 | 428 |
| Lesson 10—S | 1 | 100 | 3 | 3 | 45 | 0 | 9 | 59 | 2 | 26 | 248 |
| Total | 27 | 862 | 116 | 106 | 459 | 2 | 318 | 695 | 54 | 284 | 2923 |

(*continues*)

**Table 4.** Frequencies of codes for Research Question 2 (summary writing) (*Continued*)

| | MI | D | P | O | R | Sh | C | A | Sum | H | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Biopoem data* | | | | | | | | | | | |
| Michael | | | | | | | | | | | |
| Poem L6 | 1 | 23 | 1 | 0 | 4 | 0 | 0 | 19 | 1 | 0 | 49 |
| Poem L7 | 1 | 23 | 0 | 0 | 0 | 0 | 0 | 19 | 1 | 0 | 44 |
| Poem L8 | 1 | 23 | 6 | 0 | 6 | 0 | 0 | 19 | 1 | 0 | 56 |
| Poem L9 | 1 | 23 | 7 | 0 | 11 | 0 | 0 | 19 | 1 | 0 | 62 |
| Poem L10 | 1 | 23 | 0 | 0 | 5 | 0 | 0 | 19 | 1 | 0 | 49 |
| Poem L11 | 1 | 23 | 1 | 0 | 4 | 0 | 0 | 19 | 1 | 0 | 49 |
| Total | 6 | 138 | 15 | 0 | 30 | 0 | 0 | 114 | 6 | 0 | 309 |
| Susan | | | | | | | | | | | |
| Poem L4 | 1 | 23 | 0 | 0 | 11 | 0 | 0 | 19 | 1 | 0 | 55 |
| Poem L5 | 1 | 23 | 1 | 0 | 0 | 0 | 0 | 19 | 1 | 0 | 45 |
| Poem L6 | 1 | 23 | 5 | 0 | 10 | 0 | 0 | 19 | 1 | 0 | 59 |
| Poem L7 | 1 | 23 | 4 | 0 | 9 | 0 | 0 | 19 | 1 | 0 | 57 |
| Poem L8 | 1 | 23 | 2 | 0 | 8 | 0 | 0 | 19 | 1 | 0 | 54 |
| Poem 6L9 | 1 | 23 | 2 | 0 | 8 | 0 | 0 | 19 | 1 | 0 | 54 |
| Total | 6 | 138 | 14 | 0 | 46 | 0 | 0 | 114 | 6 | 0 | 324 |
| Steve | | | | | | | | | | | |
| Poem L5 | 1 | 23 | 1 | 0 | 7 | 0 | 0 | 19 | 1 | 0 | 52 |
| Poem L6 | 1 | 23 | 0 | 0 | 0 | 0 | 0 | 19 | 1 | 0 | 44 |
| Poem L7 | 1 | 23 | 1 | 0 | 7 | 0 | 0 | 19 | 1 | 0 | 52 |
| Poem L8 | 1 | 23 | 0 | 0 | 11 | 0 | 0 | 19 | 1 | 0 | 55 |
| Poem L9 | 1 | 23 | 0 | 0 | 6 | 0 | 0 | 19 | 1 | 0 | 50 |
| Poem L10 | 1 | 23 | 1 | 0 | 15 | 0 | 0 | 19 | 1 | 0 | 60 |
| Total | 6 | 138 | 3 | 0 | 46 | 0 | 0 | 114 | 6 | 0 | 313 |

*Note*. A = analysis; C = comprehension; D = details; H = highlighting; MI = main ideas; O = organization; P = paraphrase; R = restatement or rewrite; Sh = shorten; S = student; Sum = summarizing; T = teacher.
[a]Data missing.

at his notes and said "creative." Susan (9%) was noted to find character traits quickly and easily, often highlighting describing words such as "determined," "athletic," and "helpful." Steve (10%) highlighted most often, both by highlighting important details from the text and by specifically pointing out where he found the details as a way of defending his position or word choice (e.g., "It says right here in the text . . . ").

Importantly, the teacher also encouraged the students to add more details or go beyond the highlighted words when writing. When Michael was comparing himself with Amelia Earhart, for instance, the teacher said, "What else? Maybe not what we wrote down but do you see anything that is similar to you?" to which he replied, "Courageous." Any time a student found a piece of information from the text to include in the biopoems (e.g., Michael said, "Amelia Earhart was the first woman to fly across the Atlantic ocean"; Susan said, "Frederick Douglas taught slaves how to read"), they were finding a "detail." Consequently, details was the code that was observed most frequently in the instructional discourse, with lessons with Michael, Susan, and Steve including details for 30%, 34%, and 29% of their coded concepts, respectively. As part of collecting these details for the biopoem, students were required to interpret the text in order to distinguish important from unimportant information, which was captured in the "analyzing" code. Encouragingly, students were observed to engage in this behavior often. Content coded for analyzing in lessons

with Michael, Susan, and Steve totaled 27%, 26%, and 24%, respectively.

### *Word choice*

Word choice was frequently highlighted by the instructor throughout the lessons. Once students read the passage and summarized it, they had to select the right words to use. In fact, one purpose of this intervention was to empower the students to be creative in their word choice while paraphrasing. A good example of this was the instructor supporting creative word choice with Michael, saying,

> Remember, your bio-poem is summarizing . . . so you can take the notes you had and make specific choices about the words you use. So, you don't have to take a word from here . . . you can use words from your own vocabulary . . . . You thought of "brave," that wasn't in the text, but you read "leader" and "commander." Those are all words you can use.

As illustrated previously, the instructor frequently highlighted the need to paraphrase. For example, the instructor said "What I liked most here . . . I like that you took words that weren't actually said . . . ." She also frequently worked to build the students' vocabulary. For example, when working with Steve, he used the word "mad" to describe how Dr. Martin Luther King, Jr., might feel. The instructor expanded this in the next two sentences to include angry and unfair to work on building vocabulary and using a word that Steve had not used before. She was noted several times to say, "we used that word, can we think of something unique?" She also praised students for using "specific, smart, and thoughtful" words. One point that the instructor was noted to make was the idea of not having to write a great deal to communicate important ideas. This was stressed from the very first lesson with Michael, when he identified that the lines in a poem were shorter than a book or essay. The teacher said, "So if there aren't as many words, the author has to be specific and careful about which words they use." Paraphrasing occurred approximately 4% across lessons with each of the students.

Although students were noted to paraphrase, they engaged more often in rewriting or restating information directly from the text. Rewriting occurred in 9%, 11%, and 14%, respectively, in lessons with Michael, Susan, and Steve. Some rewriting came directly from restating the individual's first and last names, residence, and family's names, but it was also used to describe character traits. Susan, who overall demonstrated the least number of restatements (and paraphrasing), was often noted to use creative words that were not directly stated or implied in the text. For example, she used the word, "risk-taker," which was not in the text, to appropriately describe Amelia Earhart.

### *Emotion words*

Within the theme of word choice was the subtheme of emotion words. The teacher highlighted specific words and prompted students' thought process about feelings and emotions to try to focus on building students' social cognition. In one instance, she was noted to say to Michael, "I like the feeling words that you pulled out about Amelia . . . " when he decided on "energetic, excited, and happy." The teacher also tried to promote language that invited creative perspective-taking. For example, when discussing with Steve what Abraham Lincoln might have felt, she said,

> Okay he was in the Civil War. What kind of person does that make him having to deal with the whole country being in that war, ending the war? What might he have felt? Picture if you were in charge of the whole country and they were all fighting, what might you feel?

leading Steve to ultimately decide that Lincoln may have felt, "afraid of the United States suddenly becoming, like, two separate continents."

Flexibility of emotion words was also discussed. For example, when Susan was looking for someone that Amelia Earhart loved, the teacher said, "It can be a person or something she does. So, for example she was a nurse so maybe she loves helping people. So

it can be a person, or an activity..." to which she ultimately wrote that Earhart loved, "flying, her grandparents, and helping people." Later, when Susan struggled to find a fear, the teacher said, "You can also look at things people fear by looking at what's important to them." This gave insight as to why someone might have a fear, essentially looking to promote interpretation of emotions. Susan responded to this prompt by writing that Amelia feared, "war, crashing, and that she would not be allowed to fly."

### *Poetry as summary*

One purpose of the intervention was to help the students see that important information could be summarized even when using a creative form of writing. As such, summary writing through poetry was highlighted throughout the lessons. For example, in each lesson the teacher was noted to say that poetry "can summarize ideas about how people feel or about their life" and "can summarize main ideas just like a paragraph." Students learned that when they were writing their biopoems and reading them at the end of each lesson, they were in essence creating a summary about the individual; therefore, each student engaged in at least one "summary" per lesson. For Susan, that was the only time in which she summarized; Michael and Steve were also noted to engage in summary when they discussed the components of the biopoem structure (e.g., Michael summarizing that "a bio-poem is about someone's life") or even summarized something about their lives. For example, when creating a biopoem about himself and expressing one of his accomplishments, Steve summarized an experience of creating a pinewood derby car for a Boy Scouts competition, which he won. Summarization accounted for approximately 2% of coded concepts for each of the students.

## Biopoems

Frequencies of writing codes were recorded separately for the biopoems composed and discussed in each lesson (see Table 4). The biopoem structure was introduced to help guide students through the process of writing the poem. Students used it as a framework for organizing their thinking, expressing their understanding of the historical figure, and as a way of interpreting what they read in the text. Because each biopoem was written about one individual, it is not surprising that each consisted of one main idea (the historical figure). Thus, each student had one main idea for each of the biopoems. Similarly, each poem was meant to sum up an individual's life; therefore, each student had one summary for each biopoem.

All three students seemed to be able to pick up on the structure rather quickly, especially Steve. At one point, when asked, "What are some things we might look for" while reading, Steve responded by listing, in order and without looking at the organizer, all of the components of the biopoem (first name, character traits, etc.). To help guide students through the process, a focus of the discourse was on what should go in each line and the order of the poem. The teacher was often noted to say, "What comes next?" and "Where do these facts fit in our biopoem structure?" to try to help students select important information from the text on the basis of the sections of the biopoem. As such, students produced more details in their biopoems than any other coded concept. To complete the biopoem, students would have had to include 23 details about the person (first and last name, where they live, etc.). As the writing of the biopoems was scaffolded by the teacher, it is expected that each student included the same number of details. Similarly, many of the students took the details directly from the text, which resulted in a high level of rewriting for the students. In fact, there was far more rewriting than paraphrasing, which occurred infrequently, across the biopoems; paraphrasing occurred most often for Michael and Susan, with Steve paraphrasing very infrequently.

## Research Question 3—disciplinary literacy

An examination of the application of social studies codes to the instructional

discourse and biopoems created in the course of biopoem composition revealed an emphasis of skills and understandings necessary in disciplinary literacy in social studies. The evidence of disciplinary literacy was increasingly present in dialogic interactions and poems as participants engaged with the instructor while creating biopoems. Several of the codes identified through the social studies framework intertwined with the writing and social cognition frameworks, particularly codes for word choice and main ideas in writing that corresponded closely with historical concepts (HCON) and historical significance in the social studies framework, and those related to values and perspective-taking in social cognition that related closely to sociocultural anchors (SA) and perspective-taking in social studies. Frequency of social studies codes as applied to instructional discourse between teacher and student is visible for each of the three students by lesson in Table 5.

## Instructional discourse

### *Vocabulary and historical content*

A review of the instructional discourse during the creation of biopoems showed that vocabulary and discussion related to social studies vocabulary were an outgrowth of teacher/student interaction. This vocabulary development was emphasized and important because of the need to choose powerful, specific, and meaningful words to create poetry, as well as the development of content understanding. In the context of expanding social studies understanding, this emphasis provided opportunities for explanations and learning related to concepts and contexts in the discipline. This was evident in the frequency of ideas coded as HCON. Across all three participants, instructional discourse in dialogic interaction most often included discussions of HCON. For Michael's lessons, this included 37% of coded concepts; for Susan's lessons, 39%; and for Steve's lessons, 45% of coded instructional discourse included discussion of HCON. One example of this kind of discourse occurred in the context of Michael's learning the biopoem format. The vocabulary term *biography* was mentioned. The student had learned the term in another domain, but through discussion, he made a connection to its significance in social studies and history. When the teacher asked, "What's a biography?" Michael responded with, "A biography is about history?" The teacher said, "It's about a person's life . . . ." At that time, a teacher in the background said, "We did this is resource room! It was one of our vocabulary words. Do you remember?" When Michael replied, "Yeah," she followed with, "So think about that, you did learn it. You're just thinking about it in a different scenario," thus providing an opportunity for deeper understanding of HCON.

An additional focus on historical content was evident in the coding of claims (CL) made and prompted within instructional discourse in each lesson. Claims included arguments and thesis statements related to historical content, and the procedural creation of claims as well as the content of the claims was component of the dialogic interaction between the teacher and the students. These had the second highest frequency of occurrence across all participants. Michael's lesson discourse included 16% ideas coded as claims, Susan's included 12%, and Steve's included 12% claims. An example of this inclusion of claims was evident during the lessons when participants compared themselves to each historical figure. For example, as Susan considered Amelia Earhart, the teacher prompted a claim when she said, "What are some ways that you and she are different?" Susan made her claim stating, "She loves flying, but I don't love flying because I'm afraid of heights." This provided an opportunity for the procedural skill in social studies of creating claims.

### *Imagination and perspective-taking*

In addition to the declarative knowledge garnered through attention to vocabulary in social studies, procedural knowledge related to social studies intertwined with social cognition through the process of imaginative perspective-taking related to historical figures

**Table 5.** Frequencies of codes for Research Question 3 (disciplinary literacy)

| | HA | HCOT | HCON | W/E | SA | TA | I | HS | CC | C | CL | IP | INT | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Lesson data* | | | | | | | | | | | | | | |
| Michael | | | | | | | | | | | | | | |
| Lesson 4—T | 15 | 4 | 26 | 6 | 18 | 6 | 11 | 3 | 0 | 1 | 11 | 30 | 10 | 141 |
| Lesson 4—S | 0 | 0 | 10 | 10 | 1 | 0 | 1 | 2 | 0 | 0 | 22 | 6 | 1 | 53 |
| Lesson 5—T | 36 | 20 | 94 | 16 | 23 | 4 | 7 | 12 | 1 | 12 | 33 | 52 | 12 | 322 |
| Lesson 5—S | 4 | 1 | 7 | 8 | 4 | 0 | 2 | 0 | 0 | 1 | 14 | 7 | 3 | 51 |
| Lesson 6—T | 36 | 2 | 103 | 12 | 13 | 12 | 21 | 11 | 0 | 12 | 58 | 45 | 10 | 335 |
| Lesson 6—S | 14 | 3 | 57 | 14 | 17 | 4 | 9 | 2 | 1 | 2 | 27 | 18 | 3 | 171 |
| Lesson 8—T[a] | 4 | 0 | 10 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 5 | 0 | 26 |
| Lesson 8—S[a] | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Lesson 9—T | 23 | 26 | 136 | 16 | 17 | 11 | 23 | 29 | 1 | 14 | 32 | 41 | 21 | 390 |
| Lesson 9—S | 13 | 4 | 58 | 7 | 6 | 4 | 7 | 4 | 1 | 1 | 27 | 12 | 1 | 145 |
| Lesson 10—T | 21 | 11 | 99 | 11 | 6 | 3 | 26 | 20 | 2 | 8 | 39 | 36 | 21 | 303 |
| Lesson 10—S | 7 | 11 | 41 | 6 | 4 | 6 | 7 | 9 | 0 | 2 | 17 | 7 | 4 | 121 |
| Lesson 11—T | 20 | 11 | 63 | 4 | 8 | 8 | 25 | 17 | 2 | 7 | 36 | 37 | 15 | 253 |
| Lesson 11—S | 9 | 4 | 61 | 11 | 4 | 3 | 6 | 4 | 1 | 3 | 30 | 6 | 2 | 144 |
| Total | 193 | 115 | 765 | 122 | 122 | 62 | 146 | 114 | 9 | 64 | 347 | 302 | 103 | 2456 |
| Susan | | | | | | | | | | | | | | |
| Lesson 4—T | 33 | 8 | 186 | 20 | 7 | 5 | 19 | 10 | 0 | 13 | 33 | 50 | 16 | 400 |
| Lesson 4—S | 0 | 0 | 27 | 14 | 0 | 0 | 0 | 2 | 0 | 1 | 23 | 5 | 1 | 73 |
| Lesson 5—T | 36 | 7 | 175 | 14 | 12 | 3 | 7 | 41 | 1 | 11 | 58 | 41 | 14 | 420 |
| Lesson 5—S | 6 | 1 | 36 | 7 | 3 | 0 | 2 | 7 | 1 | 0 | 25 | 3 | 0 | 91 |
| Lesson 6—T | 71 | 12 | 200 | 46 | 30 | 8 | 37 | 33 | 10 | 27 | 70 | 84 | 42 | 670 |
| Lesson 6—S | 19 | 5 | 53 | 15 | 11 | 2 | 10 | 6 | 4 | 3 | 29 | 7 | 5 | 169 |
| Lesson 7—T | 15 | 3 | 110 | 13 | 7 | 2 | 10 | 13 | 1 | 9 | 35 | 26 | 17 | 261 |
| Lesson 7—S | 4 | 5 | 57 | 10 | 4 | 5 | 6 | 3 | 1 | 5 | 26 | 6 | 0 | 132 |
| Lesson 8—T | 7 | 8 | 84 | 3 | 3 | 5 | 10 | 8 | 6 | 5 | 11 | 18 | 10 | 178 |
| Lesson 8—S | 1 | 1 | 36 | 3 | 2 | 3 | 2 | 1 | 4 | 1 | 2 | 8 | 0 | 64 |
| Lesson 9—T | 18 | 1 | 94 | 4 | 1 | 0 | 9 | 10 | 0 | 0 | 10 | 26 | 12 | 185 |
| Lesson 9—S | 3 | 0 | 8 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 10 | 4 | 1 | 29 |
| Total | 213 | 51 | 1066 | 150 | 80 | 33 | 114 | 134 | 28 | 75 | 332 | 278 | 118 | 2672 |

(*continues*)

**Table 5.** Frequencies of codes for Research Question 3 (disciplinary literacy) (*Continued*)

| | HA | HCOT | HCON | W/E | SA | TA | I | HS | CC | C | CL | IP | INT | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Steve | | | | | | | | | | | | | | |
| Lesson 5—T | 52 | 10 | 238 | 11 | 15 | 5 | 16 | 19 | 5 | 9 | 46 | 49 | 19 | 494 |
| Lesson 5—S | 9 | 5 | 60 | 2 | 4 | 2 | 10 | 1 | 3 | 2 | 21 | 10 | 1 | 130 |
| Lesson 6—T | 36 | 9 | 193 | 12 | 2 | 3 | 7 | 24 | 0 | 5 | 80 | 27 | 16 | 414 |
| Lesson 6—S | 4 | 9 | 62 | 8 | 4 | 1 | 1 | 5 | 3 | 0 | 35 | 3 | 0 | 135 |
| Lesson 7—T | 24 | 32 | 305 | 6 | 11 | 14 | 18 | 31 | 42 | 8 | 60 | 43 | 24 | 618 |
| Lesson 7—S | 5 | 7 | 139 | 6 | 9 | 12 | 5 | 11 | 20 | 9 | 56 | 23 | 4 | 306 |
| Lesson 8—T | 21 | 17 | 168 | 6 | 5 | 4 | 30 | 40 | 15 | 11 | 43 | 46 | 22 | 428 |
| Lesson 8—S | 5 | 3 | 55 | 4 | 4 | 1 | 8 | 4 | 1 | 1 | 16 | 9 | 3 | 114 |
| Lesson 9—T | 36 | 22 | 191 | 16 | 13 | 13 | 32 | 24 | 2 | 6 | 51 | 53 | 13 | 472 |
| Lesson 9—S | 4 | 8 | 39 | 7 | 4 | 3 | 5 | 3 | 1 | 1 | 17 | 5 | 6 | 103 |
| Lesson 10—T | 35 | 16 | 221 | 19 | 12 | 4 | 21 | 25 | 4 | 10 | 44 | 45 | 31 | 487 |
| Lesson 10—S | 14 | 17 | 112 | 6 | 15 | 17 | 7 | 11 | 5 | 4 | 19 | 18 | 8 | 253 |
| Total | 245 | 155 | 1783 | 103 | 98 | 79 | 160 | 198 | 101 | 66 | 488 | 331 | 147 | 3954 |
| *Biopoem data* | | | | | | | | | | | | | | |
| Michael | | | | | | | | | | | | | | |
| Poem L6 | 6 | 1 | 28 | 18 | 2 | 0 | 1 | 22 | 0 | 0 | 17 | 6 | 16 | 117 |
| Poem L7 | 5 | 1 | 30 | 19 | 2 | 0 | 0 | 22 | 0 | 0 | 19 | 5 | 16 | 119 |
| Poem L8 | 5 | 2 | 30 | 14 | 1 | 0 | 0 | 22 | 0 | 0 | 14 | 5 | 16 | 109 |
| Poem L9 | 6 | 3 | 29 | 17 | 0 | 0 | 2 | 22 | 0 | 0 | 17 | 5 | 16 | 117 |
| Poem L10 | 5 | 1 | 29 | 19 | 0 | 0 | 1 | 22 | 0 | 0 | 19 | 5 | 16 | 117 |
| Poem L11 | 5 | 2 | 27 | 18 | 0 | 0 | 4 | 22 | 0 | 0 | 18 | 5 | 16 | 117 |
| Total | 21 | 8 | 115 | 68 | 1 | 0 | 7 | 88 | 0 | 0 | 68 | 20 | 64 | 460 |
| Susan | | | | | | | | | | | | | | |
| Poem L4 | 4 | 1 | 24 | 13 | 1 | 0 | 3 | 19 | 2 | 0 | 16 | 4 | 13 | 100 |
| Poem L5 | 4 | 1 | 24 | 14 | 0 | 0 | 2 | 19 | 0 | 0 | 15 | 4 | 13 | 96 |
| Poem L6 | 7 | 3 | 22 | 10 | 1 | 0 | 6 | 19 | 0 | 0 | 16 | 4 | 13 | 101 |
| Poem L7 | 5 | 2 | 28 | 15 | 1 | 0 | 5 | 19 | 0 | 0 | 16 | 5 | 13 | 109 |
| Poem L8 | 6 | 2 | 23 | 17 | 2 | 1 | 5 | 22 | 0 | 0 | 19 | 5 | 16 | 118 |
| Poem 6L9 | 5 | 2 | 28 | 17 | 2 | 2 | 6 | 22 | 0 | 0 | 19 | 5 | 17 | 125 |
| Total | 31 | 11 | 149 | 86 | 7 | 3 | 27 | 120 | 2 | 0 | 101 | 27 | 85 | 649 |

(*continues*)

**Table 5.** Frequencies of codes for Research Question 3 (disciplinary literacy) (*Continued*)

| | HA | HCOT | HCON | W/E | SA | TA | I | HS | CC | C | CL | IP | INT | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Steve | | | | | | | | | | | | | | |
| Poem L5 | 5 | 1 | 30 | 15 | 2 | 0 | 1 | 22 | 0 | 0 | 19 | 5 | 16 | 116 |
| Poem L6 | 5 | 1 | 37 | 23 | 1 | 0 | 0 | 22 | 0 | 0 | 22 | 5 | 16 | 132 |
| Poem L7 | 5 | 4 | 29 | 20 | 1 | 1 | 5 | 22 | 2 | 0 | 19 | 5 | 16 | 129 |
| Poem L8 | 5 | 2 | 28 | 20 | 2 | 0 | 1 | 22 | 0 | 0 | 20 | 5 | 16 | 121 |
| Poem L9 | 5 | 6 | 27 | 16 | 0 | 0 | 4 | 22 | 1 | 0 | 19 | 5 | 16 | 121 |
| Poem L10 | 5 | 3 | 31 | 13 | 4 | 1 | 6 | 22 | 0 | 0 | 19 | 5 | 16 | 125 |
| Total | 30 | 17 | 182 | 107 | 10 | 2 | 17 | 132 | 3 | 0 | 118 | 30 | 96 | 744 |

*Note.* C = causation; CC = change/continuity; CL = claims; HA = human agency; HCON = historical concepts; HCOT = historical context; HS = historical significance; I = imagination; INT = intertextuality; IP = interpretive process; S = student; SA = sociocultural anchors; T = teacher; TA = temporal anchors; W/E = warrants/evidence.
[a]Data missing.

and selves in the writing of biopoems. Frequencies within instructional discourse revealed a lower but consistent percentage of imaginative ideas shared between teacher and student during lessons. This percentage included 7% for Michael's lessons, 6% for Susan's lessons, and 4% for Steve's lesson. These opportunities challenged students to consider perspectives of others. In one lesson, the teacher asked Michael about George Washington, "What kinds of feelings do you think he had when he was going through those things and having those experiences?" Michael said, "sad." Subsequently, in a later lesson when the teacher prompted, "What are some other fears she [Amelia Earhart] might have had?" Michael inferred and imagined, "never being a pilot," and "losing both of her parents." The interaction between teacher and student not only gave the student an opportunity to consider the feelings of another person in history but also highlight the importance of understanding others' feelings as a historical/social studies skill to be addressed.

### *Prior knowledge*

The contextualization of knowledge evident in instructional discourse revealed students' opportunity to analyze ideas in light of existent SA and temporal anchors (TA) contributing to the ability to understand perspectives, both in looking at self and others during the composition of biopoems and in society in general. In this way, participants made judgments about social constructions related to that perspective. The combination of SA and TA comprised 9% of instructional discourse in lessons for Michael, 5% for Susan, and 4% for Steve. Steve, for example, surmised,

> I mean what was up with back then, like literally, I mean in World War II they gave African Americans rights in World War II, now they're not allowed to have any rights? That's messed up, they should make up their mind.

Similar to values and beliefs as addressed through social cognition, these beliefs were important aspects of prior knowledge and

its connection to the framework for social studies.

### *Interpretive processes*

Aligned with the integration of prior knowledge in the analysis of new knowledge were additional procedural practices in social studies that involved explicit analysis, interpretation, and the development of claims based on warrants and evidence (W/E) in the text (details). This process was modeled by the instructor and subsequently engaged in either collaboratively or independently by students. Within the lessons, interpretive processes were responsible for 15% of instructional discourse for Michael, 10% for Susan, and 8% for Steve, a significant component and evidence of higher order processes. Often, the explicit comparison of self to the historical figure provided a helpful mechanism for interpretive understanding of their traits and emotions as well as a perspective-taking opportunity:

Teacher: Okay, how are you similar?

Steve: Um, we're both very scared and afraid.

Teacher: You share feelings, good. How else are you similar?

Steve: We're both helpful.

Teacher: Yeah absolutely. Who do you help usually? Friends and your family, right?

These interpretive processes led to discussion related to events in history and their significance.

### *Historical significance*

Frequencies revealed attention to historical significance in instructional discourse in each lesson, 6% of discourse for Michaels' lessons, 5% for Susan's lessons, and 5% for Steve's lessons, and showed that overarching connection and the contextualization of people and ideas in history. Students were able to identify historical significance in recognition of what was important or meaningful for each historical figure across lessons. This was aligned with students' examination of what they found personally important. One such dialogue was related to Amelia Earhart. When Susan said, "She's really inspirational to millions," the teacher responded with, "To millions absolutely. So it says it directly in the text too. That she remains a hero and an inspiration to millions. Why do you think she's someone inspiring?" Susan was then able to identify that she was the first woman to fly. The historical significance was often evidence of understanding related to sociocultural biases and events that affected a general view of the figure and his or her accomplishments. This developed further as students progressed through the process of writing biopoems and aligned their discussion with the main ideas identified according to a writing framework.

### Biopoems

Frequencies of social studies codes were recorded separately for the biopoems composed and discussed in each lesson (see Table 5). These biopoems showed similar themes and code frequencies across lessons and participants, largely due to the structured format of these compositions and the use of scaffolding to complete the organizer within each lesson with varied levels of teacher support as needed. Although evidence of all social studies target concepts and procedures was present to some extent in instructional discourse within the lessons, the limitations of the biopoem form meant that explicit attention to several categories was not obvious in the biopoem coding. The combination of the biopoem text and the instructional discourse related to their creation and review provide a broader picture of the learning context and best capture the process of learning related to social studies and other learning targets and more accurately represent the interactive process used to compose and build understanding. Similar to the lesson discourse, historical content (HCON) and claims (CL) along with warrants and evidence (W/E) were consistently the most commonly coded frequencies in the biopoems. Historical significance was addressed by all prompt-specific content in each poem, as the process

of making choices for the composition of poems resulted in the words chosen in the final compositions for each historical figure. This was a standard finding across all poems. Similarly, the interpretive process and intertextuality were representative of the process of creating each poem and therefore evident as the result of all concepts included in the poems. Variations in the codes between participants were small and showed up when participants chose to include two ideas, or more complex ideas in the space where one idea was requested. For example, in his poem about Neil Armstrong, when prompted to include what Neil Armstrong gives, Steve wrote, "speeches, 1st successful lunar landing mission, and knowledge." The second response, first successful lunar landing mission, was much more specific and complex than the other two simpler ideas and was therefore coded to include historical contextuality and change and continuity, codes not applicable to more generalized and simple answers that were more common among participants. Imagination and perspective-taking was an implicit overarching theme of each poem's composition in its entirety but only occasionally coded specific to particular biopoem word choices. For example, when Susan wrote about Amelia Earhart, many of the words she chose came directly from the passage and discussions; however, her choice to call Amelia "athletic" was an example of a more imaginative/perspective-taking context. Although small in number, examples of evidence of prior knowledge in TA and SA and imaginative perspective-taking word choices were slightly higher in later poems than in the first attempts (see frequencies). The biopoem composed about Dr. Martin Luther King, Jr., for example, shows connections Steve made between events significant in the historical narrative he read about Dr. King. Steve identified details he believed showed what Dr. King needed to be successful with his goals, his impact and influence as an inspirer of peace, and ultimately an understanding of the emotions or feelings that Dr. King might have in light of his experiences.

Dr. Martin
influential inspirational Reverend peaceful
Michael King, Sr., Alberta Williams King, older sister, younger brother
**Who loves** African Amer. rights peace non-violence
**Who fears** harassment violence intimidation
**Who needs** supporters demonstrations protests
**Who feels** mad unfair irritated
**Who gives** speech African Amer. rights Martin Luther King Day
Resident of Atlanta, Georgia
Luther King

Understanding of the evidence in biopoems is best illuminated when combined with details related to all instructional discourse related to each lesson.

### Summary

The process of biopoem writing provided opportunities for students to integrate and expand their content knowledge, academic literacy skills, and social–emotional understanding. Examination of the instructional discourse including collaborative conversations and written biopoem products showed evidence that each participant was able to understand the procedures of the intervention and successfully complete a biopoem about each historical figure. Through the process of scaffolded composition, they were able to locate important details from the text, make text-to-self connections, and engage in collaborative conversations with the teacher regarding social studies content utilizing processes in line with standards of practice. Aspects of the intervention that required "big picture" thinking or sociocognitive skills were supported through modeling and guided questioning. The instructional discourse discussions provided examples of sociocognitive processing illustrative of expected patterns among students with ASD and subsequent evidence of the development of new understandings related to social cognition.

## DISCUSSION

Findings from this study revealed several important themes across social cognition,

writing, and disciplinary literacy. Dialogic interaction during writing lessons included the integration of targeted social studies and literacy skills combined with contextualized evidence of social cognition. These interactions provided helpful data for the assessment of student understanding across the three domains. In other words, the discourse that accompanied the biopoem lessons included evidence of thinking processes and emerging understandings that resulted from the writing process. In this way, intersecting understandings were achieved through the process of writing and writing instruction (Collins & Madigan, 2010; Ellis-Robinson, 2015; Misulis, 2009).

The context of conversation allowed for higher order thinking and intertextuality to occur. Conversation also allowed for modeling of social reciprocity that does not easily occur in large group settings during content area instruction. Modeling occurring in conversational discourse may reflect the context or procedures of social skills or theory of mind interventions. Like these interventions, biopoem writing provided an opportunity to practice initiating and maintaining conversation, turn-taking, and responding (Wang & Spillane, 2009). The use of a conversational approach helped promote communication and aspects of social function (eye contact, spontaneous initiation of joint attention, shared enjoyment in interaction, and quality of rapport; Fletcher-Watson, McConnell, Manola, & McConachie, 2014). Current research shows that there is minimal evidence supporting the use of theory of mind and/or social skills interventions with individuals with ASD (Bellini, Peters, Benner, & Hopf, 2007). Contrary to these findings, however, the current study provides evidence of higher order thinking around social cognition, made apparent perhaps through the method of analysis.

Increases in student ownership/agency were noted when their voices came through. Specifically, once the format of the biopoem was learned, students became more comfortable being creative and formulating theories. Evaluation of the discourse demonstrated that not every "off-task" comment should be redirected; instead, when the teacher followed the students' train of thought, she was often able to see relevance and understand how they were making connections. Therefore, it was important not to dismiss their theories, even if they initially seem unconnected.

The format of the biopoem appeared effective because it offered structure and consistency, which is often preferred by individuals with ASD (Tominson & Newman, 2017). At times, however, students required prompting to go beyond the graphic organizer. For example, Susan was noted to say "I thought we only needed four" when the instructor asked whether she could think of another character trait. Therefore, although the biopoem structure may have been helpful, it is important to not let the structure limit expression or creativity.

Findings in this area presented the researchers with an important question: Should teachers encourage students to pull ideas directly from the text, or will that deter their creativity? Several times throughout the study the teacher was noted to tell students to look back in the text to encourage accuracy and a summary that was factually correct. By the teacher frequently making statements such as "I like that you are using specific vocabulary words from the text," she was trying to model for the students how to take information from the text, paraphrase it, and use it to create a summary. However, for students with ASD who may be concrete in their thinking (Carnahan et al., 2011), they may believe that they must use information from the text exactly as stated in the passage, which may have been viewed in contrast to the teacher's encouragement to choose one's own creative words. The teacher did encourage students to use words that were not directly stated in the text; however, it was perhaps not as clearly stated as it needed to be for the participants to feel comfortable making inferences and being creative in their

word choice. This may be why students used many more restatements ($n = 226$ across participants) than paraphrasing ($n = 52$).

## Implications

The results of this study have a number of meaningful implications for practitioners. First, that the biopoem can be an avenue of expression for students. The intervention afforded opportunities to engage in authentic discussion about beliefs, feelings, and knowledge. This extends beyond the commonly used "interest inventory" and allows the teacher to dig deeper into the student's internal working model of the world. Teachers should consider similar activities to help learn more about their students and how to best instruct them.

Throughout the lessons, participants explored and expanded their vocabulary, specifically to describe emotions. Teachers who apply the intervention with students who have similar sociocognitive challenges can use biopoem writing to support students' emotional understanding. Furthermore, teachers could target the development of social skills by unpacking an emotion and discussing its link to behavior. However, the concept of feelings was often difficult for the students to grasp. When asked to identify what the person "feels," students were often unable to generate feeling words. Therefore, it is important for teachers to prepare students with what they need to be successful in order to discuss and fully understand beliefs and emotions.

Finally, one main purpose of the intervention was to teach students that biopoems could be used as a way to summarize historical content. Teachers should consider using other forms of creative writing across content areas and as a means of expression. Teachers also should look to teach their students that biopoems can be used for purposes other than summarizing, such as understanding emotions, considering sociocultural bias, and planning and outlining essays. This may also help support generalization of writing skills for other purposes.

## Limitations and future research

Aside from obvious limitations in generalizability due to small sample size and student characteristics, there are several more that we should identify that prompt suggestion for future research. First, we were limited in the amount of time we had, both in terms of lesson length and total intervention length, in which we could work with the students. Because it was observed that the process seemed sequential—that is, once the students became comfortable with the framework, they were more creative—we may have seen further expression of creativity if the intervention was longer. Therefore, researchers should conduct the intervention for a longer period of time. If that is not possible, researchers may consider integrating the use of biopoems into other areas of the curriculum, or over time throughout the school year.

Analyses were conducted on the basis of the transcripts of the lessons rather than videos of the lessons. As a result, some of the discourse may have been taken out of context. For example, when the student was writing and the teacher was commenting, it was impossible to know to what the teacher was responding. In the future, it may be beneficial for researchers to view videos of the instructional sessions to help create context for the discourse. This might also help determine how engaged the participants were, as some students with ASD have been reported to spend minimal time actively engaged in instruction (Sparapani, Morgan, Reinhardt, Schatschneider & Wetherby, 2016).

Next, in order to maintain fidelity of implementation, the teacher attempted to stick to a lesson script; the scripts may have affected the teacher's ability to engage in more in-depth discourse, probe deeper into students' thought processes, and increase social cognition. She had to find a balance between letting the students lead the lesson and following the intended plan. Although not a new challenge for teachers, it is worth mentioning that researchers and teachers need to consider the

extent to which they can allow students to lead the learning process.

Although the reading passages for this study did not allow much space for creativity, future research should investigate the effect that other types of literature (i.e., dramatic plays or historical fiction texts) may have on student writing. Researchers and practitioners may provide multiple accounts of people in history, so that students need to integrate ideas across texts. In addition, they may provide a text that includes minimal information, so that students will need to extrapolate more and make inferences. Finally, we used only one specific type of poem, a biopoem, in this intervention. Future researchers and practitioners should consider using other types of poetry or writing genres in an attempt to foster social cognition and disciplinary literacy.

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