

Color-Coded Graphic Organizers for Teaching Writing to Students With Learning Disabilities

Kathy B. Ewoldt and Joseph John Morgan

An active and popular student in his local elementary school, fifth-grade student Jesse looked forward to going to school every day to talk with his friends and socialize. He was less enthusiastic about academics, however. While his fifth-grade class continued to make progress with written expression skills, Jesse read at the second-grade level. Because he was really struggling, his individualized education program (IEP) team arranged for him to receive support for reading and written expression in a resource classroom. Jesse was not looking forward to leaving his friends and going to the "special" classroom. "What can they teach me there?" thought Jesse on his first day of class. "And who needs to write, anyway?"

The Common Core State Standards present new challenges for students with learning disabilities (LD), particularly relating to writing (Graham & Harris, 2013). These standards have increased the expectations for rigorous writing for all students (Straub & Alias, 2013), and they require writing across all content areas, not just English language arts (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010). Students not only have to read more rigorous texts but also be able to cite these texts as supporting evidence in their written expression (Straub & Alias, 2013). The expectation of the Common Core State Standards is that students will write more frequently about the content they are learning and that they will use varied, complex techniques to develop written expression (Graham & Harris, 2013).

Strong writers understand the writing process and use it to develop ideas into a quality piece of writing (Graham & Harris, 2009). They have ideas rich in content, and they know how to organize these ideas through writing (Straub & Alias, 2013). Students learn organization as part of the steps in the writing process: prewriting, drafting, revising, editing, and publishing. Research indicates that, when compared with their typical peers, students with LD struggle with several aspects of writing (Englert,

Raphael, Fear, & Anderson, 1988; Wong, 1997) and therefore need educational environments where they receive direct and explicit instruction in writing skills and in which they can be successful (Graham & Harris, 2013). Students with LD need not only writing process instruction but also an understanding that quality writing is more than a cursory level of text generation and proper spelling (Gillespie & Graham, 2014; Wong, 1997). To learn and generalize writing skills, students with LD require direct and explicit instruction, scaffolding, and support to develop a strong foundation of writing practices so that they can adapt their writing skills to the specific demands of writing in academic content areas (Gillespie & Graham, 2014).

Graphic Organizers

A commonly used method for supporting the writing of students with LD, graphic organizers have been shown to effectively support instruction for students with LD in a variety of content areas (Dexter & Hughes, 2011). Students with LD often struggle with the process of developing their ideas into organized sentences; the integration of graphic organizers as a support tool has been found to be effective (Baker, Gersten, & Graham, 2003; Dexter & Hughes, 2011; Englert, Zhao, Dunsmore, Collings, & Wolbers, 2007). Graphic organizers provide visual representations of abstract concepts and ideas that are the focus of writing. The organized ideas in the graphic representations are then built into complete sentences, and further developed into paragraphs as the writer moves from the prewriting to drafting steps of the writing process. Research on the writing of students with LD has consistently resulted in large effect sizes when students employed visual organizers for writing (Dexter & Hughes, 2011). To enhance the efficacy of visual organizers, Sundeen (2014) suggested adding a labeling system to show relationships among ideas in the writing of expository essays.

Color coding visual organizers provides another layer of support for

writing development. Specifically, by adding color to the graphic organizers, students create another level of organization that vividly displays relationships between undeveloped ideas and complete sentences in the paragraph. Using color coding in combination with strategy instruction has the potential to improve overall understanding of the writing process and production of written thoughts. Otto (2014) found that adding color to writing strategy instruction significantly improved overall writing achievement, increased student confidence levels, and raised motivation for students with mild to moderate disabilities. Pruisner (1993) found that color added to graphics improved recall and that systematic color coding increased recall even more significantly. Thus, adding color to a graphic organizer has the potential to provide an additional scaffold for students with LD.

Systematic Instruction for Teaching Color Coding With Graphic Organizers

Systematic instruction occurs when a teacher has identified a specific set of skills and organized them in logical sequence for instruction (Archer & Hughes, 2011). Systematic instruction is particularly important for teaching complex behaviors such as writing. By breaking down a complex task into component steps, teachers can focus on developing students' understanding and fluency with the skill prior to combining it with other skills. The principles of systematic instruction are embedded within the color-coded graphic organizer approach to writing. Using color-coded graphic organizers makes the writing process more explicit, expanding students' understanding of writing and providing students with a strategic approach to writing—two of the four writing instruction areas identified by Graham and Harris (2009) as essential for students with LD. Specifically, color coding aids students' recognition of the link between the graphic organizer and sentences within the paragraph, and it

provides visual stimulation to guide students' attention (Imhof, 2004).

Implementing Color-Coded Graphic Organizers

To make writing relevant to students' experiences, Mr. Bilkens, Jesse's new resource room teacher, had students write a paragraph about their future. He asked his students to consider what their lives would be like after school and to explain their expectations. Mr. Bilkens noticed that Jesse was an outgoing young man, full of opinions and commentary that he enjoyed sharing with the class. However, when asked to construct those ideas into a paragraph, Jesse simply had no idea where to start. Having 5 years of experience teaching in the resource classroom, Mr. Bilkens knew that he would have to implement writing supports to help Jesse master the standard.

The color-coded graphic organizer described in this article was designed for students who have LD or writing difficulties in intermediate elementary school grades (i.e., Grades 3–5). This graphic organizer is designed to provide students with an introduction to the connection between brainstorming and drafting an informative or explanatory paragraph about a specific topic. Although this graphic organizer could be used as an intervention or support for students in secondary grades who are struggling with mastering written expression, the design is focused on intermediate elementary standards. Specifically, this color-coded graphic organizer was designed to address two Common Core State Standards:

W.3.2(A-D): Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

W.3.4: With guidance and support from adults, produce writing in which the development and organization are appropriate to task and purpose.

The third-grade standards are listed here, but this intervention is

appropriate through fifth grade with the vertical alignment of the Common Core State Standards.

why and *how* help students understand and identify explanation sentences. This concept is pivotal, as students with LD

This graphic organizer is designed to provide students with an introduction to the connection between brainstorming and drafting an informative or explanatory paragraph about a specific topic.

To begin implementation of the color-coded graphic organizer, teachers should provide direct and explicit teaching on the types of sentences that students will encounter in an expository paragraph. Through a series of steps (see Table 1), students learn to produce an expository paragraph comprising four types of sentences: topic, detail, explanation, and conclusion. Students learn to recognize each type based on its characteristics and to associate the sentence type with a particular color. This same color code is used in the creation of a graphic organizer. Note that several prerequisite skills are needed prior to implementation of this graphic organizer, including the ability to write a sentence and an understanding of sentences and paragraphs. Prior to implementing this graphic organizer, teachers should ensure that students have mastered these skills, or they should provide appropriate supports and adaptations to students who have not mastered these prerequisite skills.

Using Color Coding to Determine Types of Sentences

Prior to beginning the graphic organizer process, students will need to know the four types of sentences (i.e., topic, detail, explanation, conclusion) and the characteristics of each type (see Table 2). When teaching the types of sentences, teachers need to use specific keywords to draw students' attention to the important components of a sentence that identify its type. For example, the keyword *what* helps students understand and identify detail sentences, whereas the keywords

tend to misunderstand the subtle difference between detail and explanation sentences. In order to develop the strong writing discourse skills required by the Common Core State Standards, students need to be able to differentiate between these sentence types. Repetition of these keywords (*what, how, why*) helps students to grasp this concept. Familiarity with the keywords will help students correctly identify each sentence type and will guide their eventual construction of these types of sentences in their own drafts.

Color associations. A key component of this intervention is the use of a specific color associated with each sentence type. Any three colors may be used, but once a color is chosen, it must remain consistent by sentence type. One color is used for the topic and conclusion sentences; this helps students to identify the relationship between these two sentences. A second color is used for the detail sentences, and a third color is used for the explanation sentences. For example, blue might be used for the topic and conclusion sentences, pink for the detail sentences, and yellow for the explanation sentences (see Table 1).

Mr. Bilkens taught his students the four types of sentences and the characteristics associated with each type. As he taught each type, he taught the keywords and associated color. Once students mastered identifying and describing each type based on its characteristics, Mr. Bilkens had them practice by analyzing a written paragraph. Students read each sentence, discussed the characteristics, and

Table 1. Implementing the Color-Coded Graphic Organizer

Step	Activities
1. Explicitly teach the characteristics of types of sentences in an informative or explanatory text (i.e., topic sentence, detail sentence, explanation sentence, conclusion sentence).	<ul style="list-style-type: none"> • Provide students with examples and characteristics.
2. Develop color associations for different types of sentences.	<ul style="list-style-type: none"> • For example, blue for topic or conclusion, pink for detail, yellow for explanation.
3. Explicitly teach students to identify and highlight specific types of sentences within a provided paragraph.	<ul style="list-style-type: none"> • Model for students the thought process used to identify the types of sentences and the highlighting. • Provide guided practice opportunities for students to highlight their own sentences. • Gradually reduce prompting to promote independent mastery (generally, across three class periods).
4. Explicitly teach students to develop a color-coded bubble map of the main components of the paragraph.	<ul style="list-style-type: none"> • For example, teach students to create a blue circle for topic, pink lines and circles for details, and yellow lines and circles for explanation. • Using a color-coded paragraph, explicitly teach students to paraphrase the main point of each sentence. • Explicitly teach students to write the paraphrased ideas into each bubble. • Provide guided practice opportunities for students to write the paraphrased ideas. • Gradually reduce prompting to promote independent mastery (generally, across three class periods). • Make link between the constructed paragraph and the colored bubble map clear for students to see connection between brainstorming and drafting.
5. Explicitly teach students to develop a color-coded bubble map based on a provided prompt and translate that into a drafted paragraph.	<ul style="list-style-type: none"> • Provide students a prompt that is related to their background knowledge and lived experience. • Have students generate a brainstormed list of ideas relative to that prompt. • Engage students in paired discourse about their brainstormed list to clarify and expand ideas. • Explicitly teach students to develop a color-coded graphic organizer based on the brainstormed list in response to the prompt. • Explicitly teach students to draft a paragraph based on the color-coded graphic organizer. • Gradually reduce prompting to promote independent mastery (generally, across three class periods).

determined the sentence type. Students worked in groups. Once the group unanimously agreed on the sentence type, they highlighted the sentence a certain color: blue for topic and conclusion sentences, pink for detail sentences, and yellow for explanation sentences.

Identifying and highlighting types of sentences. Once students know the characteristics of the four sentence types and the highlighting color associated with each, teachers can model how to analyze, identify, and highlight sentences in a paragraph (see Figure 1). Teachers should strategically

choose a paragraph to use during this modeling. The paragraph should contain a topic sentence, at least two detail sentences that each have at least one subsequent explanation sentence, and a conclusion sentence.

To begin instruction on identifying the different types of sentences in

paragraphs, teachers distribute copies of the model paragraph to each student and display it for the whole group (e.g., using a document projector). As an introduction to the lesson, teachers have students read the entire paragraph with a partner or in a small group to become familiar with the material. Beginning with the first sentence, teachers lead a discussion of the characteristics of each sentence using the keyword prompt. Teachers remind students of the definitions and characteristics of each type of sentence throughout instruction and model the process for highlighting the types of sentences. An outline of how teachers could model and discuss each type of sentence in the paragraph is provided in Table 3.

Figure 2 contains a sample expository paragraph that has been highlighted with the process described above. Following the highlighting process, teachers review all the steps in color coding the types of sentences in a paragraph with students. Teachers should ask pointed questions about the difference between a detail sentence and an explanation sentence to continue to support the differentiation between these sentence types. Instruction related to the identification of specific types of sentences within a paragraph should occur for 3 instructional days, with gradually faded prompting across until students display

Figure 1. Identifying and highlighting sentences

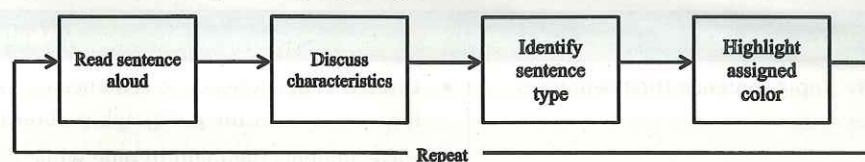


Figure 2. Color-coded paragraph

Las Vegas has much more to offer than just bright lights and gambling. Outdoor activities are available around the valley. Red Rock Canyon has several scenic hiking trails. Summer picnics and winter skiing are available on Mt. Charleston. Lake Mead national recreation area hosts boating, fishing, hiking, and hot springs. There are also a variety of museums to visit. Both kids and adults enjoy the Discovery Children's museum and the Museum of Natural History. The Mob museum chronicles the city's sordid history. Additionally, several sporting events call Las Vegas home. The National Basketball association holds its summer camp on the campus of UNLV and the National Finals Rodeo has been an annual event for nearly 30 years. Las Vegas is also home to a Triple A baseball team, the 51s. Whether you come to enjoy the warm winter temperatures or the year-round sunshine, Las Vegas has a lot to offer.

mastery of the skill. If students do not reach mastery in the identification of the types of sentences and the correlating color coding, then additional practice should be included.

Graphic Organizer Instruction

After students have a strong understanding of sentence type, teachers introduce the graphic organizer. With the same paragraph used for identifying and highlighting types of sentences, teachers then are ready to teach students to associate these identical colors with a prewriting color-coded bubble-map graphic organizer. It is important to use the same colors from the

paragraph-highlighting phase of instruction so that students clearly see the connections between the graphic organizer and their own writing.

The bubble-map graphic organizer used for this strategy contains different-colored bubbles and lines connecting each bubble to its next hierarchical idea (see Figure 3). When creating a model graphic organizer for instruction, teachers should ensure that each bubble contains only one or two words that capture the idea of a sentence. Students will not be writing complete sentences in the bubble; the process of converting complete sentences occurs in the next phase of instruction. The bubbles and lines are drawn with the colored highlighters;

Table 2. Sentence Types, Characteristics, and Highlight Colors

Sentence	Characteristics	Highlight color
Topic	<ul style="list-style-type: none"> States main idea Keeps the idea general/broad Only one main idea 	Blue
Detail	<ul style="list-style-type: none"> Gives specific information about the topic Answers the <i>what</i> question 	Pink
Explanation	<ul style="list-style-type: none"> Gives information about the detail Answers the <i>why</i> or <i>how</i> question 	Yellow
Conclusion	<ul style="list-style-type: none"> General statement about the topic Similar idea of topic sentence with different words Wraps up the paragraph Signals that the paragraph is ending (or transitioning to a new one) Typically the last sentence May include the author's general feeling/attitude 	Blue

Table 3. Modeling the Identification and Highlighting of Components of an Expository Paragraph

Step	Modeling
1. Topic sentence (first sentence)	<ul style="list-style-type: none"> • Discuss characteristics of sentence using key academic vocabulary (e.g., introduces what the paragraph is about). • Have students highlight in blue while modeling the same behavior.
2. Detail sentence(s)	<ul style="list-style-type: none"> • Ask key questions to differentiate between detail and explanation (i.e., "Does this sentence tell you something about the topic sentence by answering a what question?"). • Clearly identify sentence as a detail sentence with description of why. • Have students highlight in pink while modeling the same behavior. • Tell students that detail sentences will have one to two explanations.
3. Explanation sentence(s)	<ul style="list-style-type: none"> • Ask key questions to differentiate between detail and explanation (i.e., "Does this sentence tell you about the detail by answering how or why questions, or does this sentence tell you something else about the topic by answering the what question?") • Clearly identify as an explanation sentence with description of why. • Have students highlight in yellow while modeling the same behavior.
4. Conclusion sentence (last sentence)	<ul style="list-style-type: none"> • Discuss characteristics of sentence using key academic vocabulary (e.g., summarizes paragraph information, reintroduces topic). • Have students highlight in blue while modeling the same behavior.

Note. Repeat Steps 2 and 3 until all detail and explanation sentences have been analyzed.

the contents of each bubble should be written in pencil or pen for visual aesthetics and readability purposes. A completed graphic organizer based on this procedure is included in Figure 3.

Mr. Bilkens took the color-coded paragraph and used it as a starting point but reversed the steps of the writing process. He showed students what a graphic organizer for the already-written and already-color-coded paragraph may have looked like if the author had created a bubble map prior to drafting the paragraph.

Instruction relative to the graphic organizer begins with students practicing creating a graphic organizer using the sample paragraphs discussed during direct teaching of the sentence types. Teachers introduce the lesson by telling students that they will be creating a bubble map of ideas that the author of the paragraph could have created. Specifically, teachers tell students that the author's prewrite strategy is unknown but that they are creating one that could have been used. It is

important to remind students that a bubble map used for prewriting is the first step to drafting a paragraph. This connection between a writing product and the drafting and planning stages is essential for supporting students with LD or writing difficulties to understand the iterative process of written expression. The steps in teaching students to construct a color-coded graphic organizer are presented in Table 4.

The conclusion sentence is the only sentence that will not have a bubble on the graphic organizer, because it is the same idea that is already in the topic sentence bubble. Teachers can discuss how to use different vocabulary to describe or discuss the same topic or idea. Instruction related to the creation of bubble maps based on color-coded paragraphs should occur across 3 days, with gradually faded prompting until students are able to independently create a color-coded bubble map based on a paragraph. As with the identification of sentence types, if students are struggling to master the development of the graphic organizer, then additional instructional days should be implemented to ensure

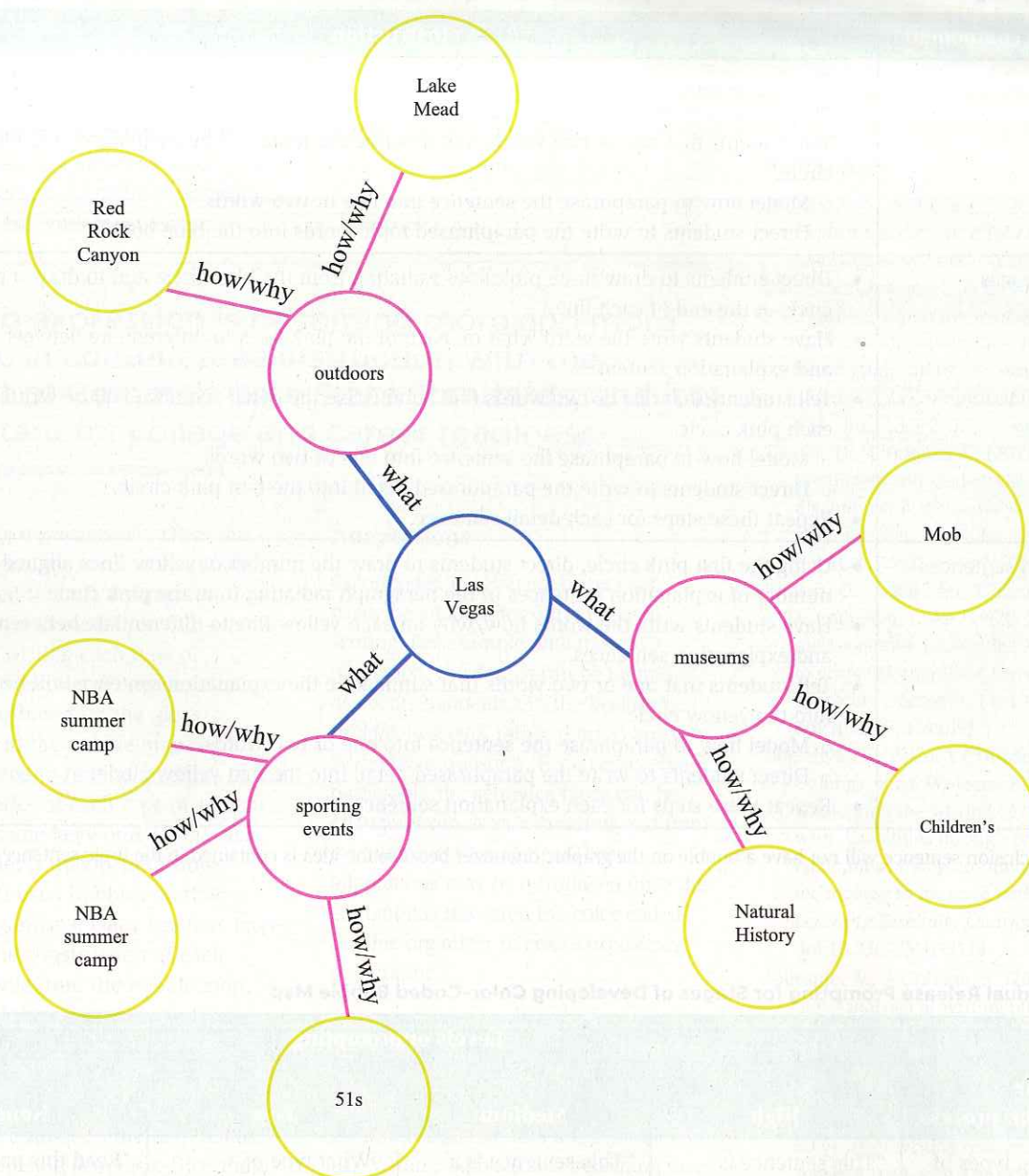
mastery. Table 5 contains sample fading prompts for the completion of the color-coded bubble map to assist in independent mastery of skills.

Creating a Paragraph From a Color-Coded Graphic Organizer

Up to this point in the instruction, students have systematically examined the writing process from the viewpoint of a finished product and mapped it to the prewriting color-coded graphic organizer. This strategy of systematic instruction ensures that students have an understanding of sentence type and basic organizational structure. That is, the process helps students to see the connection among the color coding, the graphic organizer, and a finished product. They are now ready to use the color-coded graphic organizer to plan their own writing.

Providing a prompt. Students will generate their own bubble maps as a prewriting activity. At the beginning, teachers should choose a prompt that is very familiar to students, to reduce time and energy spent on identifying

Figure 3. Sample graphic organizer



what to write about. The focus at this point of instruction should be on completing the prewriting process, not generating ideas—for example, “We have all had great teachers who have touched our lives in a special way. Who is your favorite teacher? Write a paragraph explaining why this teacher is so special.” Students should have a few minutes of “think time” to consider the prompt and how they will answer it. Following think time, teachers guide them to consider all the reasons that support their ideas.

After silent brainstorming, students should talk in pairs about their ideas, providing as many details as possible. Then, on a blank sheet of paper, students write a list of all the ideas that they told their partners. This list aids them in developing their color-coded graphic organizers.

Developing a color-coded graphic organizer. After explaining that students will be creating a bubble map as a prewrite activity, teachers should model for students how to create the

color-coded bubble map: first, drawing a blue circle with one or two words identifying the topic; second, drawing pink lines and circles with one or two words identifying the detail sentences; and third, drawing yellow lines and circles with one or two words identifying the explanation sentences. Using the brainstormed list that students developed in the previous stage of this process, teachers can encourage their participation in the completion of the bubble map. As all students are using the same prompt, however, teachers should model each

Table 4. Teaching Students to Construct a Color-Coded Graphic Organizer

Paragraph component	Instruction
Topic sentence	<ul style="list-style-type: none"> • Direct students to draw a blue circle in the center of the page, and explicitly teach that this blue circle is related to the topic of the paragraph (i.e., the topic sentence). • Tell students that one or two words that describe the topic will be written into the blue circle. <ul style="list-style-type: none"> ◦ Model how to paraphrase the sentence into one or two words. ◦ Direct students to write the paraphrased topic words into the blue bubble.
Detail sentences	<ul style="list-style-type: none"> • Direct students to draw three pink lines radiating from the blue circle and to draw a pink circle at the end of each line. • Have students write the word what on each of the pink lines to differentiate between detail and explanation sentences. • Tell students that one or two words that summarize the detail sentence will be written into each pink circle. <ul style="list-style-type: none"> ◦ Model how to paraphrase the sentence into one or two words. ◦ Direct students to write the paraphrased detail into the first pink circle. • Repeat these steps for each detail sentence.
Explanation sentences	<ul style="list-style-type: none"> • Using the first pink circle, direct students to draw the number of yellow lines aligned to the number of explanation sentences in the paragraph radiating from the pink circle. • Have students write the words how/why on each yellow line to differentiate between detail and explanation sentences. • Tell students that one or two words that summarize the explanation sentence will be written into the yellow circle. <ul style="list-style-type: none"> ◦ Model how to paraphrase the sentence into one or two words. ◦ Direct students to write the paraphrased detail into the first yellow circle. • Repeat these steps for each explanation sentence.

Note. The conclusion sentence will not have a bubble on the graphic organizer because the idea is contained in the topic sentence bubble.

Table 5. Gradual Release Prompting for Stages of Developing Color-Coded Bubble Map

Stage of the intervention process	Levels of prompting			
	High	Medium	Low	None
Highlighting types of sentences	“This sentence is a detail sentence. It describes what the topic is about. Highlight this sentence in blue.”	“This sentence is a detail sentence. How do you know this is a detail sentence? What color would you highlight it?”	“What type of a sentence is this? How do you know? What color would you highlight it?”	“Read this paragraph and identify the detail sentences. Highlight them using our scheme.”
Developing a bubble map	“This sentence is about what is available to visitors of Las Vegas. In the bubble, we will write ‘Las Vegas’ and ‘offerings.’ This is the topic, so it goes in the blue bubble because it is the topic sentence.”	“This is about what is available to visitors of Las Vegas. What two words might you right that emphasize the main point of this sentence? What bubble does it go in? Why?”	“What is this sentence about? What would you put in the bubble on your map?”	“Read this paragraph and paraphrase its main point on your bubble map.”

step with a direct and explicit teaching approach to ensure that students understand the process of developing a bubble map. Throughout this process, teachers should remind students that detail sentences answer *what* questions and explanation sentences answer *how* or *why* questions, to continue to differentiate between these types of sentences.

Writing expression is becoming more and more prolific in content area instruction with the advent of Common Core State Standards, and it is important for college and career readiness.

Drafting a paragraph. Once the graphic organizer is complete, students are prepared to draft a paragraph. Teachers should model for students the process of writing each type of sentence (topic, detail, explanation, conclusion) based on the ideas developed in the bubble map. Again, teachers need to remind students of the characteristics of each type of sentence using the same keywords (*what*, *how*, *why*). Students may benefit from crossing off used bubbles on their graphic organizers. Once teachers have modeled the construction of each sentence type from the bubble map, they model the construction of the conclusion sentence as a summary of the topic presented in the paragraph. This is important, as there is no correlating bubble on the map related to the conclusion sentence. Direct and explicit teaching as a whole class should continue across 3 days of instruction, with increasingly faded prompts until students are comfortable creating the color-coded graphic organizer and translating that content into sentences. If students struggle at any step in this process, additional practice opportunities should be presented.

Although Jesse had at first been apprehensive about attending the resource room with Mr. Bilkens, he had to admit that the connections between brainstorming his ideas and writing them

in paragraph form started to become clear to him. Using the color-coded graphic organizer that Mr. Bilkens had taught him, he was beginning to see how to write an informational paragraph to give additional information about a topic. He was excited to start doing this on his own!

Adaptations

Color-coded graphic organizers can easily be adapted for other types of writing. For example, in a narrative paragraph, the details can be identified as events happening in the *beginning*, *middle*, and *end*, rather than as answers to the *what* question. For a persuasive paragraph, the sentence types can be changed from *details* to *claims* and from *explanations* to *evidence*. These adaptations may be introduced once the student has mastered the color-coded graphic organizer to create expository paragraphs.

Conclusion

Writing a well-structured paragraph is an essential academic skill for students with LD. Writing expression is becoming more and more prolific in content area instruction with the advent of Common Core State Standards, and it is important for college and career readiness. Proficient written expression will help students be successful in general education classes. Therefore, it is essential to find strategies and techniques to support the written expression of students with LD. Using strategic color coding helps students with LD see connections between the prewriting and drafting steps. Using specific keywords to describe the sentence types helps students understand characteristics of different types of sentences. These

scaffolds will help students with LD develop rich paragraphs full of details and explanations that display the depth of their understanding of a variety of concepts.

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Kathy B. Ewoldt, Graduate Assistant, Department of Educational & Clinical Studies, Joseph John Morgan, Assistant Professor, Department of Educational & Clinical Studies, University of Nevada, Las Vegas, NV, USA.

Address correspondence concerning this article to Kathy B. Ewoldt, University of Nevada, 4505 S. Maryland Parkway, Las Vegas, NV 89154, USA (e-mail: ewoldt@unlv.nevada.edu).

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