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Sensory detail examples shapes examples worksheet answer

Temporal Words for Written Narratives		
By Carrie Clark, CCC-SLP www.SpeechAndLanguageInfo.com		
First	Next	Last
In the beginning...	After that...	Finally...
At first...	When that was done...	In the end...
To start with...	As soon as that finished...	Lastly...
As soon as we arrived...	The next thing we did was...	To finish...
Early on...	Later...	Ultimately...
Originally...	Following that...	...Once and for all.
Initially...	Subsequently...	At last...
First off...	As a result...	In spite of it all...
Before anything else happened...	Consequently...	At last...
Right away...	A while later...	After all that...
Immediately...	Immediately after that...	When all was said and done...
Straightaway...	The next week...	At the end of the day...
Without delay...	After a while...	
Instantly...	Directly after...	
We started by...	When that was done...	
We quickly began by...	Soon...	
To begin, we...	At a later time...	
The first thing...	Eventually...	
	Thereafter...	
	From then on...	

Some individuals with CVI require extra spacing between words and lines of text. Worksheets in elementary school, even in middle and high school, require visual-motor skills like cutting, sorting, and pasting. On the right, Krish uses his keyboard on the iPad to type sight words on writing lines. On the left, Krish uses his iPad and a stylus pen to write the number 6 next to an image of a clock that shows 6:00. A TVI should evaluate visual field abilities through a comprehensive CVI assessment. Use a favorite color for the font (based on assessment). What are the student's strengths?What concepts need to be understood? Slant boards or iPad stands are some helpful tools. Molly, a CVI parent, created this adaptation that includes high contrast and large font letter cards (white letters on a black background are preferred for this student with CVI). For many individuals with CVI, recognizing 2D is possible because they are highly familiar with the real-world object or experience. Notice reduced visual clutter, only one task presented at a time, enlarged images and details, and the use of his favorite color, pink, to write his answer. On the left is the original worksheet where she wrote down what her son thought was each line drawing: V for van was "car," W for wind was "cloud," X for fox was "squirrel," Y for yellow was "crayon," and Z for zebra was unrecognizable. No worksheet can do that.* Learning activities must always match the individual's learning needs as measured through comprehensive assessment and ongoing data collection. Molly, a CVI parent, shared adaptations for this cluttered worksheet filled with line drawings that focuses on the sight word "be." The parent scanned the original worksheet, saved it as a pdf under OneDrive, opened the file under OneDrive on iPad, used the marker tool in white to remove all the visual clutter, and used the highlighting tool for the writing line. Real objects and experiential learning offer multiple sensory cues that support access and learning. Matt Tietjen, TVI and creator of the 2D Image Assessment for students with CVI, cites work from neuroscientist Dr. Martha Farrah when describing the difficulty of processing 2D: As we move from objects, to photographs, to illustrations, to black and white line drawings fewer multisensory cues are available to support recognition. Let's look at an example: a car. Spacing is a great tool to decrease visual clutter. 3D is always best when possible. So instead of a bar graph showing "more," I would fill up 2 or 3 glasses with different amounts of apple juice. But when presented with a picture of the back or front of the car or a bird's eye view, the car is unrecognizable. Visual clutter is one of the biggest barriers to access for individuals with CVI. On the left, Logan uses his AAC device's keyboard with the Tiny Tap app to type in the word's missing letter, "o". Bring out the toy train models to support math concepts such as distance, measurement, 1:1 counting, addition, and subtraction. Are there tasks on the worksheet that are not connected to the learning goal? One adult with CVI shared, "The serif (the tails) add visual noise and clutter. Each answer choice is now a 3D shape using blue paper to match the color on the worksheet. For example, talk the student through the problem and solutions. Below is a list of ideas for digital tools from parents and providers, including thoughts from vision specialists, Amanda Whelan and Joy Wilson in "Trust the Process: A Case Study in Literacy and CVI," and Matt Tietjen, TVI, in his blogpost on Specific iPad Apps for Students with CVI. Numbers on are white cards in large black font. For individuals with CVI who can access 2D, replace black and white drawings with colored photographs on a plain background. We might start with 3D and then move on to using slides and boom cards for more practice. By making the worksheet's learning task digital, learners can use their AAC device, a keyboard, switch, eye gaze, or touch screen to complete the task—removing barriers presented by motor and communication complexities. What are some examples of apps to use? In Trust the Process: A Case Study in Literacy and CVI, Amanda Whelan, TVI and Assistive Technology Consultant, and Joy Wilson, TVI and O&M Specialist, explained how they adapt worksheets for their student with CVI using various iOS apps. For example, many worksheets require cutting out and pasting text or items, which are complex visual-motor skills for many individuals with CVI. Perspective from a CVI Parent "When my son was little, I would take abstract concepts like "more" and "less" and give them real-life meaning. Notice the intentional use of color for placement—green for uppercase and blue for lowercase. If so, remove them from the learning activity. Adaptations include using real objects for real-world connections to items that begin with the letter K, a Wheatley board (pictured above) with long and short velcro lines and pink dots for tactile exploration and manipulation to teach visual recognition, spatial configuration concepts, elements of the shape, short, long, angle, and diagonal. Instead of 10 math problems on the page, present one or two problems (based on the student's needs). Use masking tools (e.g., typescoper) if clutter needs to be hidden on the fly. So when she's not able to see the symbol, she can use color to support recognition." *From Visualizing Math: Considerations for Students with CVI Where can real photographs be used to support learning instead of line drawings? For example, use a black magnet board or All-in-one board to place numbers, letters, symbols, sentence strips, graphs, and so on. Real object: color, how light interacts with it, visual texture (surface characteristics like shiny or speckled), tactile exploration, actual size, depth and dimension, visual attributes, sound cues, context and full interaction with the car in daily life (riding in it, getting gas, opening the doors, washing it, hearing the horn, feeling the car start and stop, etc.)Photograph of the real object: color, how light interacts with it, visual texture, visual attributesIllustration: color, basic visual attributesBlack and white drawing: basic visual attributesYou'll notice that the farther we get away from the real object, the fewer cues available to support recognition and access. These images needed to be directly taught and learned through repetition before being connected to the learning activity. Each of these letters with its corresponding image was presented one at a time. Perspective from a CVI Parent "Worksheets are not accessible at all for my son. Notice minimal visual clutter and intentional use of bright bold colors against a plain background. For example, the number 4 is always green, and the multiplication sign is always pink. If the learner can process more than one 2D item at a time, use a lot of space between each item to support visual attention and recognition—for example, 2 inches or 6 inches. We do a good deal of concept development and salient features [visual attributes] for literacy to avoid empty language. For the one above, it's to sort lowercase and uppercase letters. CVI families and professionals share that using particular apps on a device offers many tools for adapting a worksheet, such as adding color and spacing, erasing visual clutter, and replacing drawings with photographs. Many individuals with CVI are dual media learners, so they may use both print and Braille or both print and audio, or all three! How can we use digital tools to adapt the worksheet and remove barriers to access? For example, use a 3D model for a geometry problem or manipulatives for substituting. We have to always consider how all of the CVI visual behaviors come into play when thinking about access to learning. Math examples In Matt Tietjen's presentation about CVI and the Math Mind, he shared this example of adapting a math worksheet with 16 equations to solve. Using food for any activity is out of the question because he is 100% tube fed and has quite a few food triggers for seizures. Color can help the CVI brain attend to targets amid clutter. Remember, 2D takes a lot more effort to visually process than a real object for many individuals with CVI, and color-coding is one compensatory strategy to support access. Perspective of an adult with CVI "Tina, an adult with CVI, shared how instrumental color is when solving math equations. For those individuals with CVI who can access 2D, color photographs of the actual item (object, place, person, thing) provide the most support for visual recognition. If Tina's working with only black print, she can't follow the math problem. Create a story box for a piece of text or experience what characters are doing if the concept is unfamiliar. No matter how you slice it, worksheets are the key tool that schools use to teach content and assess student knowledge and skills. Often handwriting worksheets, like this one for the letter "k," use black and white drawings and concepts learned through incidental learning to teach handwriting skills, all of which are not accessible for many with CVI. Rather than finding a word in a cluster of 23 words, present the word with 1-2 others (with a lot of space in between). How can the information be presented using another medium? We usually try a variety of modalities. Sans serif fonts (no tails) are easier to process." And another adult with CVI wrote, "For me [Times New Roman] is way too crowded and not sharp enough lines. Based on the Learning Media Assessment (LMA) results, use the accommodation that will allow full access to the content on the page, for example, Braille or an audio version of the text. This is a problem when the majority of worksheets include highly symbolic black and white drawings. Using an All-in-one board with a black felt background, one equation is presented using a red plus sign, a green equal sign, and a blue box to post the solution to the equation. Always keep the learning goal in mind and make it meaningful How can the concept be taught using real objects, meaningful situations, and other sensory channels? You Doodle Pro (one-time cost), upload images of the worksheet, crop and break it up, erase clutter, add photographs and color!Stick Around (one-time cost): add adapted image of worksheet, create drag and drop items (removing clutter, glaring, sorting), and create an answer key Good Notes (one-time cost): scan the worksheet in the app, erase clutter, add color, edit, zoom in, and write directly onto the worksheet using a tablet pen or keyboard PowerPoint, Keynote, or Google Slides: use a slide deck option to adapt the learning task, add a plain background, color, movement, recording, real photographs, and/or accessible fontSnapType (one-time cost): take a picture of the worksheet and the student is able to zoom in on one problem at a time, and type an answer for each problem.iPad Camera/Photo Album: When adaptations need to be made on the fly, take a picture of the worksheets or close up portions of the worksheet, and use the markup tool as needed to reduce clutter and add color.BitsBoard: Use to make custom flashcard activities or picture touch games using photographs, letters, numbers, words, etc. Tiny Tap (monthly subscription): create interactive learning tasks and books, highly customizable, able to type on the page, accessible and compatible with assistive technology Boom Cards (monthly subscription): convert each learning task on the worksheet into an interactive card, able to customize, add color, and simplify the visual presentation, provides choice selection, and is accessible and compatible with assistive technology Perspective from a CVI Parent "We are dealing with multiple disabilities, not just CVI. Some individuals with CVI have visual field loss, inattention, or neglect in specific visual fields (upper, lower, right, left). People with CVI like you have trouble when things are too close together without spacing. Without a foundational understanding of basic concepts, the house of knowledge soon collapses. If the individual with CVI requires large print, it's critical to remove the visual clutter first. How can each item/task on the worksheet be presented one at a time? The learner with CVI can use tactical cues and real object manipulation to show what they know. Present one problem or concept at a time in 3D, slides, Boom Cards, or Tiny Tap. In Matt Tietjen's presentation about CVI and the Math Mind, he shared this example of using color to group related elements in these instructions for a geometry problem to reduce visual search, show visual relationships, and convey salient information. Color-coding can play an important role in visually processing a math problem or literacy task. Read about how one parent uses low-tech CVI accommodations for a visually complex task—studying maps. What are the cues available to support recognition and concept development for each form? Adapting worksheets for CVI Worksheets are inaccessible for many students with CVI mainly due to visual clutter, black and white highly symbolic line drawings, font type and size, the need for visual-motor skills, and the general fact that worksheets are a two-dimensional (2D) form. Kira, a CVI parent, shared how she adapted a worksheet that used black and white images to show words that start with a certain letter of the alphabet. To control the clutter, you can use your black cover or ask for the worksheet to be adapted on your iPad so you can zoom in, add color, and type your responses." Learn more about what access looks like for individuals with CVI If there are three tasks on the page, break them into three pages, one task per page. This adapted learning task was then completed on an iPad (backlighting to support visual attention and recognition) in the Stick Around app, where the student dragged the correct letters to spell out the CVC word in each picture. Let's get real about worksheets and CVI. If it's a complex diagram of the water cycle, break it up into one part at a time, then put a few together once it becomes familiar. With too much visual clutter, vision may become blurry, the visual field may reduce, and the brain becomes overwhelmed, leading to profound fatigue. Before worksheets, think about access to learning Individuals with CVI require an approach to learning that incorporates multiple sensory modalities (tactile, auditory, kinesthetic, visual) matched to their unique needs. Not all worksheets are created equal, but all worksheets have one thing in common for many individuals with CVI—they are inaccessible. It's nearly impossible to avoid worksheets in our educational system, so it's important to figure out how to make the goal of a worksheet into an accessible learning task. For example, some prefer the learning materials at eye level, while others may need the materials positioned on the right side at eye level. Remember, always ask: what's the goal of the worksheet learning? I know a lot of people with visual impairments who get sick reading this font. Is another sensory channel required to access the text on the worksheet? Use color to group related elements in an equation or word problem to ease visual search. Too much visual information at once means nothing can be fully seen for individuals with CVI. An individual with CVI may learn to recognize a picture of a car from the side view. "This worksheet is cluttered with things too close together. We consider the purpose/lesson presented by the worksheet when adapting. I also got rid of any extraneous numbers or words or lines." How can increased spacing support visual access during this learning task? Notice the adaptations for the cluttered worksheet (which also requires cutting and pasting of letters): removed visual clutter, added colored realistic images, color-coded the boxes to place the letters, highlighted "CVC" in student's favorite color (pink), and showing a small chunk of the task at a time. With the iPad position at eye level, her son used the zoom tool to make the task larger and the stylus pen to complete each task one at a time. On the right, Logan uses his touch screen monitor to select the yellow Pentagon. Use a color-coded template (e.g., colored boxes) to do computations, writing tasks, and so on. Many individuals with CVI use color-coding (identifying something based on its color rather than its details and shape) to support recognition and understanding. I used food a lot for math problems as it was motivating - counting out cheerios or M&M's. Visual-motor skills are complex for many individuals with CVI. What concepts need to be directly taught due to the lack of access to incidental learning?How can we incorporate experiential learning to build memory and context?What are the CVI supports and adaptations for visual access?What are the multisensory approaches (tactile, auditory, kinesthetic) matched to the unique needs of the student that support access to learning and be a bridge to perception and understanding? How will the student show their learning?The correct answer got eaten? What is the essential piece of information on this page?The farther away we get from the real object, the fewer cues to support recognition. Preferably, the activity needs to be set up as a choice selection through Boom cards, for example, only if the teacher creates the cards to match his individualized needs for visual access." After the learning task in the worksheet is adapted, what is the most visually accessible position? Her vision often becomes blurry, especially with a lot of visual clutter and too much to visually process. Notice the reduction of visual clutter, increased spacing, intentional use of color, accessible font and size, learning presented in an accessible visual field with manipulatives to support visual motor and tactile cues. My son is nonverbal and does not have use of his hands. Real three-dimensional (3D) objects are more accessible for many individuals with CVI to recognize and interpret. Notice the intentional use of the color pink to highlight the bottom of the writing line and the color red for the word model and the text he types. So in our case, everything must, must, must be digital or 3D (with restrictions on what he can touch). And the problem with many worksheets? This includes using real objects and real-world experiences to support concept development. If there is background clutter in a photograph, remove it. When each number and symbol has its own color, she can follow the equations. Kira replaced the line drawing with real colored photographs or real realistic colored illustrations. Make it digital and present one task/item at a time on a slide with a plain background. Perspective from a CVI Parent "Once my son got the diagnosis of CVI at age 13, we adapted math worksheets by cutting them into strips, but what worked best was redoing them and putting only one or two problems on a page with lots of space in between. What are the multisensory choices offered? In Matt Tietjen's presentation about CVI and the Math Mind, he shared this example of using a 3D model for a geometry multiple-choice problem about a triangular prism. A clear photo of an object against a plain background (e.g., white or black plain background) supports visual access. Before adding photos ask: is this object/concept already highly familiar to the individual with CVI? Touching the inside of a pumpkin for an OT activity at school set off a huge seizure. I have two kids with CVI, and worksheets are a HUGE waste of time. Self-determination and advocacy The need for adapted materials to access learning is a great opportunity to teach students with CVI self-advocacy skills when presented with an inaccessible worksheet. If digital, it has to be accessible with a single switch with one touch, such as using a switch to activate an action or turn page. They are crowded with too much text, drawings, and figures on the page. Often looking at one thing at a time is how many individuals with CVI process the visual world. Instead, it is a thoughtful consideration of how to make learning accessible through different sensory modalities. The goal is full access to education and the environment, every moment of every day. If worksheets (without adaptations or a multisensory instructional approach) are solely being used to teach a concept, apply a skill, and show new learning and mastery of a skill, then the individual with CVI does not have access to an appropriate and accessible education—to Free Appropriate Public Education (FAPE). Worksheets don't help build foundations of learning. Replace the font on the worksheet with the font type, size, and color that is most accessible to the learner with CVI, according to their Learning Media Assessment (LMA) results. To be clear: a multisensory approach does not necessarily mean using all the senses together at once (remember, sensory integration while using vision is difficult for many with CVI). Remove long multi-step instructions, borders, designs, extraneous text, numbers, lines, etc. We also need to consider angles and the perspective of the image. For example, alternating colors to differentiate items can support 1:1 counting or substituting. One CVI parent noted that when a photo can't replace black and white illustrations, she'll remove the details that aren't important and add color to specific pieces of the image, using a favorite color for the essential part of the image. How can color be used to support the process of the learning task? You have to know the student in front of you. All of the adaptations discussed above are often applied at the same time when adapting worksheets for a student with CVI. Real-life experiential learning is key. Follow what interests and motivates the learner. Or have a bar cookie/candy and have shorter and longer pieces. I have always said my kids need to 'live it to learn it.' CVI Parent For every learning activity, consider this thinking process: What is the learning goal?What skills are needed? Also, Molly, a CVI parent, intentionally uses color and colored dots on the writing lines to support the visual motor skills of writing. The ideas below are meant to inspire inquiry into what might work best for your child with CVI. 1. In general, a backlit device supports visual attention and recognition for many individuals with CVI. CVI is part of the blindness spectrum—a worksheet should never be the first and only option provided to learn a concept and show learning. If they love public transportation, create stories about riding the train, use the names of train stops to learn new words or letter sounds, incorporate stops along a train ride into a math problem or to teach sequencing. The space required should be assessed using the Learning Media Assessment (LMA). How can color support visual recognition of important items/concepts connected to this learning activity? Before throwing a worksheet on a tablet, it's essential to know the goal of the learning task and how certain apps will allow access. If the learning task includes a new concept and object for the individual with CVI, then direct instruction of the real thing and concept must happen first before simply adding a photograph. Is the font type and size accessible? Research shows that sans serif typefaces (e.g., Arial, Helvetica, Verdana) are more readable than Times New Roman for individuals with low vision. Sometimes adding color to black and white diagrams or drawings can support recognition. Start by presenting one piece of information at a time.

Sensory detail worksheet.

Some individuals with CVI require extra spacing between words and lines of text. Worksheets in elementary school, even in middle and high school, require visual-motor skills like cutting, sorting, and pasting. On the right, Krish uses his keyboard on the iPad to type sight words on writing lines. On the left, Krish uses his iPad and a stylus pen to write the number 6 next to an image of a clock that shows 6:00. A TVI should evaluate visual field abilities through a comprehensive CVI assessment. Use a favorite color for the font (based on assessment). What are the student's strengths?What concepts need to be understood? Slant boards or iPad stands are some helpful tools. Molly, a CVI parent, created this adaptation that includes high contrast and large font letter cards (white letters on a black background are preferred for this student with CVI). For many individuals with CVI, recognizing 2D is possible because they are highly familiar with the real-world object or experience. Notice reduced visual clutter, only one task presented at a time, enlarged images and details, and the use of his favorite color, pink, to write his answer. On the left is the original worksheet where she wrote down what her son thought was each line drawing: V for van was "car," W for wind was "cloud," X for fox was "squirrel," Y for yellow was "crayon," and Z for zebra was unrecognizable. No worksheet can do that.* Learning activities must always match the individual's learning needs as measured through comprehensive assessment and ongoing data collection. Molly, a CVI parent, shared adaptations for this cluttered worksheet filled with line drawings that focuses on the sight word "be." The parent scanned the original worksheet, saved it as a pdf under OneDrive, opened the file under OneDrive on iPad, used the marker tool in white to remove all the visual clutter, and used the highlighting tool for the writing line. 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Bring out the toy train models to support math concepts such as distance, measurement, 1:1 counting, addition, and subtraction. Are there tasks on the worksheet that are not connected to the learning goal? One adult with CVI shared, "The serif (the tails) add visual noise and clutter. Each answer choice is now a 3D shape using blue paper to match the color on the worksheet. For example, talk the student through the problem and solutions. Below is a list of ideas for digital tools from parents and providers, including thoughts from vision specialists, Amanda Whelan and Joy Wilson in "Trust the Process: A Case Study in Literacy and CVI," and Matt Tietjen, TVI, in his blogpost on Specific iPad Apps for Students with CVI. Numbers on are white cards in large black font. For individuals with CVI who can access 2D, replace black and white drawings with colored photographs on a plain background. We might start with 3D and then move on to using slides and boom cards for more practice. 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Adaptations include using real objects for real-world connections to items that begin with the letter K, a Wheatley board (pictured above) with long and short velcro lines and pink dots for tactile exploration and manipulation to teach visual recognition, spatial configuration concepts, elements of the shape, short, long, angle, and diagonal. Instead of 10 math problems on the page, present one or two problems (based on the student's needs). Use masking tools (e.g., typescoper) if clutter needs to be hidden on the fly. So when she's not able to see the symbol, she can use color to support recognition." *From Visualizing Math: Considerations for Students with CVI Where can real photographs be used to support learning instead of line drawings? For example, use a black magnet board or All-in-one board to place numbers, letters, symbols, sentence strips, graphs, and so on. 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And another adult with CVI wrote, "For me [Times New Roman] is way too crowded and not sharp enough lines. Based on the Learning Media Assessment (LMA) results, use the accommodation that will allow full access to the content on the page, for example, Braille or an audio version of the text. This is a problem when the majority of worksheets include highly symbolic black and white drawings. Using an All-in-one board with a black felt background, one equation is presented using a red plus sign, a green equal sign, and a blue box to post the solution to the equation. Always keep the learning goal in mind and make it meaningful How can the concept be taught using real objects, meaningful situations, and other sensory channels? You Doodle Pro (one-time cost), upload images of the worksheet, crop and break it up, erase clutter, add photographs and color!Stick Around (one-time cost): add adapted image of worksheet, create drag and drop items (removing clutter, glaring, sorting), and create an answer key Good Notes (one-time cost): scan the worksheet in the app, erase clutter, add color, edit, zoom in, and write directly onto the worksheet using a tablet pen or keyboard PowerPoint, Keynote, or Google Slides: use a slide deck option to adapt the learning task, add a plain background, color, movement, recording, real photographs, and/or accessible fontSnapType (one-time cost): take a picture of the worksheet and the student is able to zoom in on one problem at a time, and type an answer for each problem.iPad Camera/Photo Album: When adaptations need to be made on the fly, take a picture of the worksheets or close up portions of the worksheet, and use the markup tool as needed to reduce clutter and add color.BitsBoard: Use to make custom flashcard activities or picture touch games using photographs, letters, numbers, words, etc. Tiny Tap (monthly subscription): create interactive learning tasks and books, highly customizable, able to type on the page, accessible and compatible with assistive technology Boom Cards (monthly subscription): convert each learning task on the worksheet into an interactive card, able to customize, add color, and simplify the visual presentation, provides choice selection, and is accessible and compatible with assistive technology Perspective from a CVI Parent "We are dealing with multiple disabilities, not just CVI. Some individuals with CVI have visual field loss, inattention, or neglect in specific visual fields (upper, lower, right, left). People with CVI like you have trouble when things are too close together without spacing. Without a foundational understanding of basic concepts, the house of knowledge soon collapses. If the individual with CVI requires large print, it's critical to remove the visual clutter first. How can each item/task on the worksheet be presented one at a time? The learner with CVI can use tactical cues and real object manipulation to show what they know. Present one problem or concept at a time in 3D, slides, Boom Cards, or Tiny Tap. In Matt Tietjen's presentation about CVI and the Math Mind, he shared this example of using color to group related elements in these instructions for a geometry problem to reduce visual search, show visual relationships, and convey salient information. Color-coding can play an important role in visually processing a math problem or literacy task. Read about how one parent uses low-tech CVI accommodations for a visually complex task—studying maps. What are the cues available to support recognition and concept development for each form? Adapting worksheets for CVI Worksheets are inaccessible for many students with CVI mainly due to visual clutter, black and white highly symbolic line drawings, font type and size, the need for visual-motor skills, and the general fact that worksheets are a two-dimensional (2D) form. Kira, a CVI parent, shared how she adapted a worksheet that used black and white images to show words that start with a certain letter of the alphabet. To control the clutter, you can use your black cover or ask for the worksheet to be adapted on your iPad so you can zoom in, add color, and type your responses." Learn more about what access looks like for individuals with CVI If there are three tasks on the page, break them into three pages, one task per page. This adapted learning task was then completed on an iPad (backlighting to support visual attention and recognition) in the Stick Around app, where the student dragged the correct letters to spell out the CVC word in each picture. Let's get real about worksheets and CVI. If it's a complex diagram of the water cycle, break it up into one part at a time, then put a few together once it becomes familiar. With too much visual clutter, vision may become blurry, the visual field may reduce, and the brain becomes overwhelmed, leading to profound fatigue. Before worksheets, think about access to learning Individuals with CVI require an approach to learning that incorporates multiple sensory modalities (tactile, auditory, kinesthetic, visual) matched to their unique needs. Not all worksheets are created equal, but all worksheets have one thing in common for many individuals with CVI—they are inaccessible. It's nearly impossible to avoid worksheets in our educational system, so it's important to figure out how to make the goal of a worksheet into an accessible learning task. For example, some prefer the learning materials at eye level, while others may need the materials positioned on the right side at eye level. Remember, always ask: what's the goal of the worksheet learning? I know a lot of people with visual impairments who get sick reading this font. Is another sensory channel required to access the text on the worksheet? Use color to group related elements in an equation or word problem to ease visual search. Too much visual information at once means nothing can be fully seen for individuals with CVI. An individual with CVI may learn to recognize a picture of a car from the side view. "This worksheet is cluttered with things too close together. We consider the purpose/lesson presented by the worksheet when adapting. I also got rid of any extraneous numbers or words or lines." How can increased spacing support visual access during this learning task? Notice the adaptations for the cluttered worksheet (which also requires cutting and pasting of letters): removed visual clutter, added colored realistic images, color-coded the boxes to place the letters, highlighted "CVC" in student's favorite color (pink), and showing a small chunk of the task at a time. With the iPad position at eye level, her son used the zoom tool to make the task larger and the stylus pen to complete each task one at a time. On the right, Logan uses his touch screen monitor to select the yellow Pentagon. Use a color-coded template (e.g., colored boxes) to do computations, writing tasks, and so on. Many individuals with CVI use color-coding (identifying something based on its color rather than its details and shape) to support recognition and understanding. I used food a lot for math problems as it was motivating - counting out cheerios or M&M's. Visual-motor skills are complex for many individuals with CVI. What concepts need to be directly taught due to the lack of access to incidental learning?How can we incorporate experiential learning to build memory and context?What are the CVI supports and adaptations for visual access?What are the multisensory approaches (tactile, auditory, kinesthetic) matched to the unique needs of the student that support access to learning and be a bridge to perception and understanding? How will the student show their learning?The correct answer got eaten? What is the essential piece of information on this page?The farther away we get from the real object, the fewer cues to support recognition. Preferably, the activity needs to be set up as a choice selection through Boom cards, for example, only if the teacher creates the cards to match his individualized needs for visual access." After the learning task in the worksheet is adapted, what is the most visually accessible position? Her vision often becomes blurry, especially with a lot of visual clutter and too much to visually process. Notice the reduction of visual clutter, increased spacing, intentional use of color, accessible font and size, learning presented in an accessible visual field with manipulatives to support visual motor and tactile cues. My son is nonverbal and does not have use of his hands. Real three-dimensional (3D) objects are more accessible for many individuals with CVI to recognize and interpret. Notice the intentional use of the color pink to highlight the bottom of the writing line and the color red for the word model and the text he types. So in our case, everything must, must, must be digital or 3D (with restrictions on what he can touch). And the problem with many worksheets? This includes using real objects and real-world experiences to support concept development. If there is background clutter in a photograph, remove it. When each number and symbol has its own color, she can follow the equations. Kira replaced the line drawing with real colored photographs or real realistic colored illustrations. Make it digital and present one task/item at a time on a slide with a plain background. Perspective from a CVI Parent "Once my son got the diagnosis of CVI at age 13, we adapted math worksheets by cutting them into strips, but what worked best was redoing them and putting only one or two problems on a page with lots of space in between. What are the multisensory choices offered? In Matt Tietjen's presentation about CVI and the Math Mind, he shared this example of using a 3D model for a geometry multiple-choice problem about a triangular prism. A clear photo of an object against a plain background (e.g., white or black plain background) supports visual access. Before adding photos ask: is this object/concept already highly familiar to the individual with CVI? Touching the inside of a pumpkin for an OT activity at school set off a huge seizure. I have two kids with CVI, and worksheets are a HUGE waste of time. Self-determination and advocacy The need for adapted materials to access learning is a great opportunity to teach students with CVI self-advocacy skills when presented with an inaccessible worksheet. If digital, it has to be accessible with a single switch with one touch, such as using a switch to activate an action or turn page. They are crowded with too much text, drawings, and figures on the page. Often looking at one thing at a time is how many individuals with CVI process the visual world. Instead, it is a thoughtful consideration of how to make learning accessible through different sensory modalities. The goal is full access to education and the environment, every moment of every day. If worksheets (without adaptations or a multisensory instructional approach) are solely being used to teach a concept, apply a skill, and show new learning and mastery of a skill, then the individual with CVI does not have access to an appropriate and accessible education—to Free Appropriate Public Education (FAPE). Worksheets don't help build foundations of learning. Replace the font on the worksheet with the font type, size, and color that is most accessible to the learner with CVI, according to their Learning Media Assessment (LMA) results. To be clear: a multisensory approach does not necessarily mean using all the senses together at once (remember, sensory integration while using vision is difficult for many with CVI). Remove long multi-step instructions, borders, designs, extraneous text, numbers, lines, etc. We also need to consider angles and the perspective of the image. For example, alternating colors to differentiate items can support 1:1 counting or substituting. One CVI parent noted that when a photo can't replace black and white illustrations, she'll remove the details that aren't important and add color to specific pieces of the image, using a favorite color for the essential part of the image. How can color be used to support the process of the learning task? You have to know the student in front of you. All of the adaptations discussed above are often applied at the same time when adapting worksheets for a student with CVI. Real-life experiential learning is key. Follow what interests and motivates the learner. Or have a bar cookie/candy and have shorter and longer pieces. I have always said my kids need to 'live it to learn it.' CVI Parent For every learning activity, consider this thinking process: What is the learning goal?What skills are needed? Also, Molly, a CVI parent, intentionally uses color and colored dots on the writing lines to support the visual motor skills of writing. The ideas below are meant to inspire inquiry into what might work best for your child with CVI. 1. In general, a backlit device supports visual attention and recognition for many individuals with CVI. CVI is part of the blindness spectrum—a worksheet should never be the first and only option provided to learn a concept and show learning. If they love public transportation, create stories about riding the train, use the names of train stops to learn new words or letter sounds, incorporate stops along a train ride into a math problem or to teach sequencing. The space required should be assessed using the Learning Media Assessment (LMA). How can color support visual recognition of important items/concepts connected to this learning activity? Before throwing a worksheet on a tablet, it's essential to know the goal of the learning task and how certain apps will allow access. If the learning task includes a new concept and object for the individual with CVI, then direct instruction of the real thing and concept must happen first before simply adding a photograph. Is the font type and size accessible? Research shows that sans serif typefaces (e.g., Arial, Helvetica, Verdana) are more readable than Times New Roman for individuals with low vision. Sometimes adding color to black and white diagrams or drawings can support recognition. Start by presenting one piece of information at a time.



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