Developing Visual Skills for Children who Face Cortical Visual Impairments

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Children who face significant neurological challenges, may also exhibit difficulties using their vision effectively, due to cortical vision impairment. How do we help these children develop neurological pathways to enable them to make sense of what they see? How do we design adaptations and augmentative communication strategies to enhance vision development, cognition and communication?

Introduction:

Cortical vision impairment is diagnosed by functional visual disabilities. Typically, these children have a "normal" vision report from an ophthalmologist, meaning that their eyes are not damaged or defective. However, observation of the child's behavior reveals lack of use, or limited use, of vision for functional activities. These vision problems stem from neurological damage and difficulty with the brain processing what comes in through the eyes. For these children, vision is always changing, and specific attention needs to be paid to building the neurological pathways that enable them to make sense of what they see. Without this, vision can fail to develop or deteriorate. With appropriate and practical strategies for developing visual skills, integrated into daily routines, many of these children can improve their ability to process visual information and make sense of what they see.

Dr. Christine Roman, has delineated characteristics of children who have cortical vision impairments and developed strategies to assist with the development of vision. She has also developed questionnaires for parents that help identify cortical vision impairment in very young babies. These characteristics may include: a normal eye report, light gazing, specific color preferences, movement assisting vision, latency of visual gaze, visual field differences, lack of interest in visual novelty, difficulties with visual complexity and distance viewing, absence of primitive visual reflexive responses, visual motor difficulties, and trouble with coordinating listening and looking.

Children who experience cortical vision impairment may have multiple challenges, including motor problems, cognitive delays, and difficulty with language and communication. These students present a unique set of challenges that require special considerations. Vision Specialists, who have experience with cortical vision impairment, should be an integral member of these children's teams. They will be able to conduct a functional vision assessment and help the team understand what strategies will assist vision for that child at given times in development of his/her vision.

Coordinating Listening and Looking:

Children who have an auditory strength, often choose to interact auditorily with their environment and may ignore visual information, thus loosing opportunities to develop vision. Many of these children can not pay attention to both auditory and visual information at the same time. When both are presented together, the child chooses to listen and not look. Understanding this can help us change the way we interact with these children and how we present materials. Sound can sometimes be used to attract visual attention, but then, if it continues, the child may look away in order to focus on the sound, thus shutting off the visual information. When talking, to children who have cortical visual impairment, we should get their attention and allow them to look first, before describing things to them, commenting or singing to them. Make sound a powerful reinforcer for looking. For example, instead of calling to a child when you enter the room, try to get the child to visually locate you before greeting her. You can move, use facial expressions and other body language, but save the verbal language, until the child gives you a look of recognition. In a similar manner, when showing pictures and picture symbols to a child, allow them to focus in visually before adding the verbal stimulus. For simple cause and effect experiences, try to provide some activities that allow for visual responses to the child's efforts. For example, try switch-activated animation and movement on a computer screen without sound, delayed sound, or a short sound at the beginning, silence for most of the animation, and then fun sounds at the end.

Movement Assists Vision:

Movement is often an effective way to increase visual interest. The young child's brain is wired to pay attention to movement. Using movement can assist the child in understanding the visual difference between an object and the background. By quietly shaking a toy or picture, the child will be more likely to look at it. This is in contrast to a child with a physical vision impairment of the eyes. Those children may have more difficulty seeing something that is moving. Sometimes, children with cortical visual impairment will locate something that is moving using peripheral vision, but then inspect it more closely with central vision. Using movement and animation on simple software programs, such as IntelliPics, can be an effective strategy to promote vision. Language play and simple communication activities can be designed in this way.

Latency of Visual Gaze:

Latency of gaze is often an issue. The child may take quite a bit of time to actually look at an object or picture. If the object is not kept in the same location long enough, the child may not have the opportunity to see it. Movement, without sound, such as shaking in one location, instead of moving through a wide area is more effective. This of course, is impacted by visual

fields, which will be discussed below. With effective presentation of materials, visual latency can lesson over the course of an activity, as the child starts to “turn on” his visual channels. This should be encouraged. Just as vision can improve with use, sometimes the child’s vision fatigues with intense use, and he may need a short rest from using his vision.

Visual Field Differences:

Differences in visual fields are another obstacle. In addition to being different, they often change. Sometimes a child may not see to one side or below or above a certain point. However, this can change from day to day and also sometimes change within an activity. As we present sign language or picture symbols or other technologies to these children, we need to carefully monitor the child’s visual field and move the pictures or ourselves to areas where the child gives an indication that she can see. This is particularly important when presenting choices. Present choices one at a time, make sure that the child can locate each item and then present both in the same location that each was presented individually. Sometimes children can do better when both items are presented to one side, one above the other, and other times, items need to be presented at the same level, but maybe slightly above eye level. Observation of the child is your best guide. Motor challenges also effect the child’s ability to maintain a gaze on an item and also to reach for an item. Being aware of these problems helps us be alert and observant of the child, so we can constantly monitor how we need to present materials.

Novelty:

Disinterest in novelty is a surprising characteristic. Unlike typical children, who are generally much more interested in new toys and sights, the child with cortical visual impairment, may completely disregard new sights and instead choose to look more at familiar spectacles. This is because the child has developed some neurological pathways to process what she has seen many times and she can make more sense of it. With new items, the child is overloaded and not able to relate what she is seeing to existing visual pathways. These new pathways must be built slowly over time, since the usual visual pathways may have been damaged. The child must constantly compare what she is seeing to information that already makes sense to her, in order to build these pathways. Consistency in how visual materials are presented is important, as well as frequency, and relating what is being seen to function. Special attention to symbol selection, presentation, and frequency should be considered in using Aided Language Stimulation (Goossens’, Crain, Elder) which is a powerful way to build visual and auditory familiarity.

Complexity:

Another major challenge for children with cortical visual impairment is complexity. Items that a child can visually recognize may seem to disappear in front of a busy background or when placed with a group of other items. Complexity can overwhelm the visual system and then the child may not be able to process what he is seeing. Bringing items/pictures closer, placing them individually on a plain black background, and/or highlighting them with a flashlight are all strategies that will reduce complexity. Picture symbols with a single color are less complex than multiple colors on one picture. White symbols, with highlighted backgrounds are a good choice to use with these children. When using pictures, allow the child to focus on them visually without auditory distractions and then point out what they are looking at in the picture to help them relate to what they are seeing. For example, with a picture of a dog, “Look, here is his head, there is the nose, eyes and ears... back here is his tail and he has four legs.”

Visual Motor:

Visual motor skills are often difficult for these children. Many will look and then look away when reaching, which makes coordination of the two challenging. This may be related to a motor reflex, or it may be a result of underdeveloped vision or both. If the child is using a communication system that relies on the coordination of vision and motor skills alone to select a communication message, the child may have considerable difficulty.

Communication Strategies:

Create communication opportunities and strategies that allow the child to use auditory strengths, so that the child’s language development is not held back by delayed visual skills. At the same time, make sure that there are plenty of opportunities to enhance visual skills, especially, when the child is not communicating. This is a tricky balance, because concentrating only on auditory skills, may mean that visual skills deteriorate. Most of these children do well with forms of partner assisted auditory scanning, tactile systems with voice-output, and auditory scanning on devices. Two switch auditory step scanning allows the child time to process information at her own pace, and to know when to look for the visual component of the system. Visually following someone’s finger or a moving object along a scan, may be easier than following a succession of blinking lights. The idea is to provide the visual component, but not to require the child to rely on the vision to utilize a communication system. With the visual component present, over time, it may become less of a novelty and be able to be processed by the child. Being able to utilize both vision and hearing will, in the long run, give the child more

options for communication systems. Being able to communicate effectively using auditory and/or tactile strategies, as soon as possible, will insure the child has the tools to develop language and communication.

Conclusion:

Due to the unique characteristics of cortical vision impairment, careful planning and integrated strategies can have a major impact on the development of neural pathways for vision as well as provide children with effective learning and communication systems that can take advantage of the child's strengths.

References:

Christine Roman, PhD, material from American Foundation for the Blind publication, in progress. romanc@Marshall.edu

STRATEGIES FOR WORKING WITH CHILDREN WITH CORTICAL VISUAL IMPAIRMENT

The following is a compilation of strategies useful for working with children having Cortical Visual Impairment (CVI).

STRATEGIES, ELEMENTARY

1. Pictures, objects – keep them simple and clear.
2. Color contrast helps a lot.
3. Background should be solid, not confusing design.
4. Take notice of glare.
5. Give the student time to respond – sometimes "beyond reasonable."
6. Use their preferred color to help teach something, even to move them to another color.
7. When introducing patterns, start with preferred color. Gradually introduce second color, keeping preferred color dominant.
8. Determine what size preference exists.
9. Consider touch as a major sense for learning. Use real objects whenever possible.
10. Repeat, repeat, repeat!
11. Make changes s-l-o-w-l-y!
12. Introduce new objects through touch and verbal description.
13. Note fluctuations in visual attention.
14. Take note if student is fatigued or over-stimulated.
15. Reduce outside noise that may be distracting (e.g., mom's voice)
16. Move those objects!
17. Find preferred spots where the student can see (the holes in the Swiss cheese). Place objects in these positions. NOTE: Midline is rarely the area of choice.
18. Make sure the student is positioned right. Use head support, angle of wheelchair, tumbleform, etc. The goal is to "see" and this should be the student's main task.
19. Use language, but be consistent in what you use.
20. Use the familiar to introduce something unfamiliar.
21. Make sure what you use is truly motivating or else find something that is.
22. Allow for breaks.
23. Watch those subtle response cues! (e.g., changes in breathing patterns, shifts of gaze, stilling of the body, etc.)
24. Reduce complexity by hiding parts of a picture or object.
25. Begin and end with an activity that is within the student's abilities at the moment. Behavior today is not always the same as behavior yesterday.
26. Determine which sensory system gives the most accurate information; then pair visual skills with that system.
    a. To determine which sensory system is most accurate for the student, use only one sense at a time (e.g., using a favorite sound like a rattle). Just after the student starts touching something nice and soft, shake rattle. If the student stops touching, suspect a problem with multi-sensory perception.

27. Link touch to visual input for the student to understand the concept.
28. Care should be taken to prevent visual overload. Do not over-stimulate the student with visual clutter. Over-stimulating lights and other things may distract the student. You may need to adapt the environment.
29. Avoid any extraneous stimulation. You may need to adapt the environment to reduce noise clutter and other distracters.
30. Use simple cues. Keep materials, toys, and environment simple in form and uncluttered.
31. Present visual images in isolation. Present items one at a time. Avoid figure-ground clutter.
32. Use real and familiar objects rather than abstract. (example: orange versus circle) Familiar objects might be a bottle, bowl, toy, or diaper. Present these one at a time.
33. Be aware of visual preferences, also color, shape and/or size preference.
34. Look for a visual field preference. There is no rule as to whether central vision or peripheral vision is better.
35. Color vision is usually intact and color can be used effectively. Color code simple pictures and shapes for additional cues. Use bright fluorescent colors like red, yellow, pink, orange, and green. Perhaps outline pictures, numbers, letters to attract attention to something you want the student to focus on.
36. Use high contrast such as yellow against black.
37. To keep visual performance from fluctuating and to help reduce visual fatigue:
    a. Try working for shorter periods of time, but more often.
    b. Try to limit the number of people directly involved in the intervention.
    c. Try to divide a long task into smaller amounts and present more often.
    d. Important to remember the fatigue factor and put it into the Learning Media Assessment.
38. Allow student to avoid using visual gaze, if necessary. If a student looks away from an object in a specific task and uses tactile to perform the task, deliberately avoiding using vision, it may be so the student can complete the task. (This theory has not been proven.) In this instance, do not try to teach the student to use his/her vision at this critical moment.
39. Students may get close or bring objects close to their eyes. This is probably done to block out extraneous background information. Remember, crowding is when too many objects are put next to each other. This often leads people to believe students with CVI are near-sighted. These students often near-sighted, but this does not necessarily mean near-sighted. (Don't put your keys/pencils on table while working with student.)
40. Utilize repetition and routines. This makes it easier for the student to understand his/her environment. Generalizations can occur more easily when the same visual

cues or objects are used in different activities. Change one thing at a time, generalizing along the way. Use same object, same process, etc. Familiarity and security breed response.

a. Example: Start with one yellow object, and then move to another yellow object, and then on to another. Each time a change is made, the time for the student to respond should get shorter.

41. Language helps a student to understand a visual situation by adding meaning to it. Be consistent in the language you use. (Find the . . . ., get the . . . ., where is the . . . ?) There are times when any language at all could break the student's focus on a task. Be aware of the student's response cues.

42. Even though it is said that the "Where" system is easier than the "What" system, looking around the room for a toy is difficult as there is usually so much to see. Use terms like "big blue ball." This helps to focus and bring the object out of its background more easily.

43. Students with CVI need help to successfully decode visual images.

44. Be aware of other "drains" on energy. It is important to determine the best position for the student to use his/her eyes. The more energy being expended on holding one's self up, the less can be used for seeing and for focusing. Often times, just other people talking can be too much.

45. When a student responds more to moving objects, their O & M skills are probably better, but "at the table" work is very difficult for them.

46. Use contingent stimulation so that student with multiple impairments learns to control his/her environment.

47. Use active versus passive learning.

48. Reduce visual stimulus and perhaps work in an environment where type, intensity, and duration of sensory information can be controlled.

49. If the student seems to be tiring or fading away, give them some free time.

50. Be patient when watching for a visual response from the student.

51. Supplement the material presented with tactile, verbal and/or auditory, or color cues. Keep these cues simple and direct.

52. Although things should be kept simple, be sure to use visually interesting items and don't forget about common household objects which might be interesting to explore.

53. Give the student repeated practice. Remember, the more familiar something is, the greater the chance that they can "see" it.

54. Allow the student to view objects as close as necessary or in any manner he/she needs to (for example, tilting of the head). The student might be compensating for a field loss.

55. When using touch as a means of introducing new information, guide the student's hand (by the wrist) to the object or lightly touch the object to the student's fingertips rather than just placing everything in his/her hand. If the student is encouraged to reach out, it seems to help develop some sense of depth perception and also helps counteract the "good fairy syndrome."

56. Observe the student. Let he/she "tell" you what they can "see" and "do" best.

57. A combination of reading media may be necessary. Many students use print as well as Braille to access their materials. In order to keep up, a student may start by reading print but may fatigue and then change to Braille.

58. Space objects farther apart on a page and use finger to move from one object to next on a page.

59. You may need to buy two books so one can be cut up, using the main characters or objects and gluing them one to a page. (Most books have pages on each side so you would need two books.) Dollar Store finds are good, just make up your own stories to go with the pictures.

60. Piece-meal vision may be a problem. Face recognition may be hard. If scanning is abnormal, less attention is given to features. Reading requires much scanning, focusing and refocusing. Color vision is usually intact and color can be used effectively. Color code simple pictures and shapes for additional cues. Use bright fluorescent colors like red and yellow. Pink, orange and green are also great.

61. You might outline numbers, letters, or pictures to attract attention to something you want the student to attend to (spelling words). Color Mylar seems to evoke visual responses. Examples:

    a. One mother used flashcards and picture dictionaries to match pictures with words.

    b. One mother found that repeating short periods of visual exercises helped her student to learn to process certain kinds of information (tracing, power of tactile/kinesthetic input).

c. One student could identify any size Winnie the Pooh, but it had to be in yellow or red color. When the same pictures were in black and white, the student was unable to identify at all.

d. Lightbox materials really need to be adapted and tried.

62. Bright lighting can help a student see and attend to visual materials more consistently; however, with students having CVI, the lighting definitely needs to be adjusted, both natural and artificial.

63. Try varying the sources of light from behind and/or the side. Different situations may need different lighting. You may need to turn off a light or use diffused lighting to get the student to focus on the task.

64. Controlled incandescent lighting may be better than fluorescent lighting. The buzz from the fixture may be very annoying and distracting to the student with CVI.

65. Even though students with CVI are attracted to bright lights, etc., they may be overwhelmed. They may only look briefly, look away, look again. They cannot focus for any amount of time.

66. Some students with CVI are photophobic and need to have a dim light or be shielded from bright sunlight.

67. Use bright yellow or other contrasting tape to mark step edges, doorframes, etc.

68. Use a bright color (one the student seems to see best) to mark clothing hooks, nametags, computer keys, recorder on/off buttons, other personal items.

69. Color-code letters or words.

70. Have student track words by sliding fingers across the line.

71. Block off extraneous material on a page so student can concentrate on one line, word, or picture.

72. Get personal care items (brushes, combs, cups, etc.) in a bright color that the student sees best or a favorite color.

73. Incorporate a visually interesting item into the student's therapy routine.

74. Find books with one or two realistic pictures per page on a plain, neutral, contrasting background. Avoid bright or busy backgrounds.

75. At mealtime, use contrast whenever possible (light-colored plates and dark placemat). Use color the student sees best or favorite color.

76. Crisscrossing contrasting tape on a plain ball will give it a flicker effect when it rolls and makes it more "visible."

77. When the student does seem to be looking at something or someone, tell them about what they are seeing and try to get the student to interact with the object or person in some other way (smelling it, reaching for it, batting at it, etc.).

STRATEGIES
EARLY INTERVENTION

1. A combination of reading media may be necessary. Many children use print as well as Braille to access their materials. In order to keep up, a child may start by reading print but may fatigue and then change to Braille.

2. Use contrasting paper, templates or marker to block out some of the visual information. Materials, whether it is pictures or toys, should be simple in form, high contrast (bright yellow against a black background, etc.). Choose objects/pictures with only one or two colors (may be difficult to find) prevent visual "overload" and limit viewing area by showing one object/picture or one part of an object/picture at a time. Keep simple and uncluttered. Have children STOP, LOOK, and LISTEN.

3. Space objects farther apart on a page and use finger to move from one object to next on a page.

4. Use books with one clear picture on a contrasting simple background. The simpler, less busy picture is needed. Some artists' styles are already simple and have little clutter; one book like this is "Are You My Mommy?"

5. You may need to buy two books so one can be cut up using the main characters or objects, gluing them one to a page. (Most books have pages on each side so you would need two books). Dollar Store finds are good. Just make up your own stories to go with the pictures.

6. Piece-meal vision may be a problem. Face recognition may be hard. If scanning is abnormal, less attention is given to features.

7. Color vision is usually intact and color can be used effectively. Color code simple pictures and shapes for additional cues. Use bright fluorescent colors like red, yellow (easy to see). Pink, orange and green are also great.

8. You might outline numbers, letters, or pictures to attract attention to something you want child to attend to (spelling words). Colored Mylar seems to evoke visual responses. Pom Poms (careful).

    a. One mother used flashcards and picture dictionaries to match pictures with words.

    b. One mother found that repeating short periods of visual exercises helped her child to learn to process certain kinds of information (tracing, power of tactile/kinesthetic input).

c. One child could identify Winnie the Pooh in any size but it had to be in yellow or red color. When the same pictures were in black and white, child was unable to identify at all.

d. Light box materials really need to be adapted and tried.

9. Take notice of glare.

10. Give the child TIME to respond – sometimes "beyond reasonable."

11. Use their preferred color to help teach something, even to more them to another color.

12. When introducing patterns, start with preferred color. Gradually introduce second color, keeping one dominant.

13. Keep colors constant – e.g., red bowl indicates "time to eat" both at home and at school.

14. See what size preference exists.

15. Pair an object with sound – or NOT: depends on how well a child can take this "dual" sensory experience.

16. Consider touch as a major sense for learning.

17. Repeat, repeat, repeat!

18. Make changes s-l-o-w-l-y!

19. Introduce new objects through touch and verbal description.

20. Note fluctuations in visual attention.

21. Take note if child is fatigued or over-stimulated.

22. Reduce outside noise that may be distracting (e.g., Mom's voice).

23. Move those objects!

24. Find preferred spots where the child can see – the holes in the "Swiss cheese." Place objects in these positions. NOTE: Midline is rarely the area of choice.

25. Make sure the child is positioned right. Use head support, angle of wheelchair, tumbleform, etc. The goal is to "see" and this should be the child's main task.

26. Use language, but be consistent in what you use.

27. Make sure what you use is truly motivating, or else find something that is.

28. Allow for breaks.

29. Watch those subtle response cues! (e.g., changes in breathing patterns, shifts of gaze, stilling of the body, etc.)

30. Use bright yellow or other contrasting tape to mark step edges, door frames, etc.

31. Use a bright color (one the child seems to see best) to mark clothing hooks, nametags, computer keys, recorder on/off buttons, other personal items.

32. Color code letters or numbers.

33. Get personal care items (brushes, combs, cups, etc.) in a bright color that the child sees best.

34. Incorporate a visually interesting item into the child's therapy routine. Examples: Have the child roll toward a pinwheel and reach for it, or stand to find and bat at a mylar balloon, or sit and roll a brightly striped beach ball or orange. This not only enhances and provides motivation for use of vision, but also provides motivation for rolling, sitting, standing, etc.

35. Find books with one or two realistic pictures per page on a plain, neutral, contrasting background. Avoid bright or busy backgrounds.

36. At mealtime, use contrast whenever possible (e.g., light-colored plates and dark placemat). Use color the child sees best for the cup, etc.

37. Keep one or two visually interesting items within the child's visual range at all times. Use the items that seem to be most visually appealing to the child.

38. Try highlighting items with a lightbox or flashlight.

39. Crisscrossing contrasting tape on a plain ball will give it a flicker effect when it rolls and make it more "visible."

40. When the child seems to be looking at something or someone, tell them about what they are seeing and try to get the child to interact with the object or person in some other way (smelling it, reaching for it, batting at it, etc.).

41. Work in an environment where type, intensity, and duration of sensory information can be controlled.

42. If the child seems to be tiring or fading away, give them some free time.

43. Allow the child to view objects as close as necessary or in any manner he/she needs (e.g., tilting of the head). The child might be compensating for a field loss.

44. When using touch as a means of introducing new information, guide the child's hand (by the wrist) to the object or lightly touch the object to the child's fingertips rather than just placing everything in his/her hand. If the child is encouraged to reach out, it seems to help develop some sense of depth perception and also helps counteract the "good fairy syndrome."

45. Observe the child. Let he/she "tell" you what they can "see" and "do" best.

46. Begin with an activity that is within the child's abilities at the moment. Behavior today is not always the same as behavior yesterday.

47. Determine which sensory system gives the most accurate information, then pair visual skills with that system.

    a. To determine which sensory system is most accurate for the child, use only one sense at a time (e.g., favorite sound like a rattle). Just after child starts touching something nice and soft, shake rattle; if the child stops touching, suspect a problem with multi-sensory perception.

48. Link touch to visual input for the child to understand the concept. Pair visual information with other sensory cues. Begin by using only one sense at a time; however, since vision is often best stimulated when paired with another sensory system, a multi-sensory approach should soon be tried, if and when this is possible.

49. Use real and familiar objects rather than abstract. Example: orange vs. circle. Familiar objects might be bottle, bowl, toy, or diaper. Present these one at a time.

50. Allow child to avoid using visual gaze, if necessary. If a child looks away from an object in a specific task and uses tactile to perform the task, deliberately avoiding using vision, it may be so he/she can complete the task. (This theory has not been proven.) In this instance, do not try to teach the child to use his/her vision at this "critical moment."

51. Children may get close or bring objects close to their eyes. This is probably done to block out extraneous background information. Remember, crowding is when too many objects are put next to each other. This often leads people to believe children with CVI are near-sighted. These children often are, but this does not necessarily mean near-sighted. (Don't put your keys/pencils on table while working with child.)

52. When children respond more to moving objects, their O & M skills are probably better, but "at the table" work is very difficult for them.

53. Movement might mean rocking child over a roll, present light while rocking, stop rocking and put out light. Child may begin to associate and you will be able to decrease the pairing.

54. Use contingent stimulation so that child with multiple impairments learns to control his/her environment.

55. Bright lighting can help a child see and attend to visual materials more consistently; however, with children having CVI, the lighting definitely needs to be adjusted, both natural and artificial.

56. Try varying the sources of light from behind and/or the side.

57. Different situations may need different lighting.

58. May need to turn off a light or use diffused lighting to get the student to focus on the task.

59. Controlled incandescent lighting may be better than fluorescent lighting. The buzz from the fixture may be very annoying and distracting to the child with CVI.

60. Even though children with CVI are attracted to bright lights, they may be overwhelmed. They may only look briefly, look away, and look again. They can't focus for any amount of time.

61. Some children with CVI are photophobic and need to have a dim light or be shielded from bright sunlight.

STRATEGIES
HIGH SCHOOL

1. Use colors carefully. Consider preferred colors and highlighting colors to clarify focus and provide visual orientation on diagrams and maps.

2. Educational materials with diagrams and printing may be too overwhelming. Make a "diagram booklet" for easier visual processing.

3. When working with high school students on lower level visual skills, make sure your motivational materials are age-appropriate and not insulting to the maturity level around their peers.

4. Pictures, objects – keep them simple and clear.

5. Background should be solid, not confusing design.

6. Experiment with light and note what helps. Bright lighting, or lighting on the object may also help. Sometimes, less lighting helps too. Make sure you know the student's needs.

7. Take notice of glare.

8. Give the student TIME to respond – sometimes "beyond reasonable."

9. Determine what size preference exists.

10. Consider touch as a major sense for learning.

11. Make changes s-l-o-w-l-y!

12. Introduce new objects through touch and verbal description.

13. Note fluctuations in visual attention.

14. Take note if student is fatigues or over-stimulated.

15. Find preferred spots where the student can see – the holes in the "Swiss cheese." Place objects in these positions. NOTE: Midline is rarely the area of choice.

16. Use the familiar to introduce something unfamiliar.

17. Make sure what you use is truly motivating, or else find something that is.

18. Try varying the sources of light from behind and/or the side.

19. Different situations may need different lighting.

20. Controlled incandescent lighting may be better than fluorescent lighting. The buzz from incandescent fixtures may be very annoying and distracting to the student with CVI.

21. Even though students with CVI are attracted to bright lights, they may be overwhelmed. They may only look briefly, look away, then look again. They cannot focus for any amount of time.

22. Some students with CVI are photophobic and need to have a dim light or be shielded from bright sunlight.

23. Use bright yellow or other contrasting tape to mark step edges, doorframes, etc.

24. Use a bright color – one the student seems to see best – to mark clothing hooks, name tags, computer keys, recorder on/off buttons, other personal items.

25. Have student track words by sliding fingers, across the line.

26. Get personal care items (brushes, combs, cups, etc.) in a bright color that the student sees best.

27. Try highlighting items with a lightbox or flashlight.

28. Crisscrossing contrasting tape on a plain ball will give it a flicker effect when it rolls, and makes it more visible.

29. Any idea that will reduce glare, heighten contrast, create a pattern, movement, or in some way help the item stand out from the background will probably facilitate a visual response.

30. In all situations, try to get the student to attend visually. Be patient. If no response is noted, keep trying so that the student becomes familiar with the routine and objects used.

31. Remember to use real objects, people, and everyday routines of the student as often as possible. Use things that will encourage further exploration and/or interaction, and use of several of the senses.

32. Give the student repeated practice. Remember, the more familiar something is, the greater the chance that they can "see" it.

33. Allow the student to view objects as close as necessary or in any manner he/she needs (e.g., tilting of the head). The student might be compensating for a field loss.

34. Observe the student. Let he/she "tell" you what they can "see" and "do" best.

35. The simpler, more constant, and more predictable the visual information, the better the student with CVI is likely to deal with it.

36. Link touch to visual input for the student to understand the concept. Pair visual information with other sensory cues. Begin by using only one sense at a time; however, since vision is often best stimulated when paired with another sensory system, a multi-sensory approach should soon be tried, if and when this is possible.

37. Introduce new and old objects via touch and verbal description. Touch should be considered as a major sense for learning. Encourage exploration by touch, then have student look at object, but allow student to avoid visual gazes if needed.

38. Care should be taken to prevent visual overload. Do not over-stimulate the student with visual clutter. Over-stimulating lights and other things may distract the student. You may need to adapt the environment.

39. Look for a visual field preference. There is no rule as to whether central vision or peripheral vision is better.

40. Color vision is usually intact and color can be used effectively. Color code simple pictures and shapes for additional cues. Use bright fluorescent colors like red, yellow, pink, orange, and green. Perhaps outline pictures, numbers, letters to attract attention to something you want the student to focus on. Colored Mylar seems to evoke visual responses (pom poms).

41. To keep visual performance from fluctuating and to help reduce visual fatigue:

    a. Try working for shorter periods of time, but more often.

    b. Try to limit the number of people directly involved in the intervention.

    c. Try to divide a long task into smaller amounts and present more often.

    d. Important to remember the fatigue factor and put it into the Learning Media Assessment.

42. Language helps a student to understand a visual situation by adding meaning to it. Be consistent in the language you use. (Find the . . .; get the . . .; where is the . . .) There are times when any language at all could break the student's focus on a task. Be aware of the student's response cues.

43. Even though it is said that the "where" system is easier than the "what" system, looking around the room for a toy is difficult as there is usually so much to see.

Consider using terms like "big blue ball." This helps to focus and bring the object out of its background more easily.

44. Students with CVI need help to successfully decode visual images.

45. Use movement of a visual stimulus to elicit a visual response. Objects are more easily seen when they are moving, especially in the peripheral fields. Try shaking objects in different visual fields.

46. When students respond more to moving objects, their O & M skills are probably better, but at-the-table work is very difficult for them.

47. Use active versus passive learning.

48. A combination of reading media may be necessary. Many students use print as well as Braille to access their materials. In order to keep up, a student may start by reading print but may fatigue and then change to Braille.

49. Space objects farther apart on a page and use finger to move from one object to next on a page.

50. Face recognition may be difficult. If scanning is abnormal, less attention is given to features.

51. Reading requires much scanning, focusing and refocusing.

STRATEGIES
STUDENTS WITH MULTIPLE DISABILITIES

1. Pictures, objects – keep them simple and clear.

2. Color contrast helps a lot.

3. Background should be solid, not confusing design.

4. Experiment with light and note what helps. Bright lighting or lighting on the object may help. Sometimes less lighting helps also. Make sure you know the student's needs. The light of a lightbox in a dim or dark room may help keep the attention of a student who usually looks at the ceiling lights.

5. Eliminate glare.

6. Give the student time to respond – sometimes "beyond reasonable." Note student's normal response (eye blink, squeezing, etc.) to pleasurable and non-pleasurable stimuli.

7. Identify and use their preferred color to help teach something – even to move them to another color.

8. Make use of fluorescent colors, Mylar sheets/objects, backlighted (e.g., lightbox).

9. When introducing patterns, start with preferred color. Gradually introduce second color, keeping one dominant.

10. Keep colors constant – e.g., red bowl indicates "time to eat" both at home and at school.

11. See what size preference exists.

12. Pair an object with sound – or NOT: depends on how well a student can take this "dual" sensory experience.

13. Consider touch as a major sense for learning.

14. Repeat, repeat, repeat!

15. Make changes s-l-o-w-l-y!

16. Introduce new object by touching the student with the object and verbal description. Repeat both prior to and during the activity.

17. Gain and maximize periods of visual attention.

18. Avoid teaching times when student is fatigued or over-stimulated.

19. Reduce outside noise that may be distracting (e.g., Mom's voice).

20. Move those objects s-l-o-w-l-y!

21. Find preferred spots where the student can see – the holes in the "Swiss cheese." Place objects in these positions. NOTE: Midline is rarely the area of choice.

22. Make sure the student is positioned right. Use head support, angle of wheelchair, tumbleform, etc. The goal is to "see" and this should be the student's main task.

23. Use language, but be consistent in what you use.

24. Use the familiar to introduce something unfamiliar.

25. Make sure what you use is truly motivating, or else find something that is.

26. Allow for breaks.

27. Watch those subtle response cues! (e.g., changes in breathing patterns, shifts of gaze, stilling of the body, etc.)

28. Keep manuals simple and detail free

29. Keep toys simple. Some electronic stuff is multisensory and can become over-stimulating.

30. Use bright yellow or other contrasting tape to mark step edges, doorframes, etc.

31. Use bright color to mark wheelchair tray, computer switches, lunch place setting, personal symbols, etc.

32. Color code letters or numbers.

33. Get personal care items (brushes, combs, cups, etc.) in a bright color that the student sees best.

34. Incorporate a visually interesting item into the student's therapy routine. Examples: Have the student roll toward a pinwheel and reach for it, or stand to find and bat at a mylar balloon, or sit and roll a brightly striped beach ball or orange. This not only enhances and provides motivation for use of vision, but also provides motivation for rolling, sitting, standing, etc.

35. Find books with one or two realistic pictures per page on a plain, neutral, contrasting background. Avoid bright or busy backgrounds.

36. At mealtime, use contrast whenever possible (e.g., light-colored plates and dark placemat). Use color the student sees best for the cup, etc.

37. Keep one or two visually interesting items within the student's visual range at all times. Use the items that seem to be most visually appealing to the student.

38. Try highlighting items with a lightbox or flashlight.

39. Crisscrossing contrasting tape on a plain ball will give it a flicker effect when it rolls and make it more "visible."

40. Anything that will reduce glare, heighten contrast, create a pattern, movement, or in some way help the item stand out from the background, will probably facilitate a visual response.

41. In all situations, try to get the student to attend visually. Be patient. If no response is noted, keep trying so that the student becomes familiar with the routine and objects used.

42. When the student seems to be looking at something or someone, tell them about what they are seeing and try to get the student to interact with the object or person in some other way (smelling it, reaching for it, batting at it, etc.).

43. Visual images should be simple in form and presented in isolation or well-spaced so that they can be seen individually.

44. Reduce visual stimulus and perhaps work in an environment where type, intensity, and duration of sensory information can be controlled.

45. Keep the student as comfortable as possible so the only thing they have to concentrate on is "seeing."

46. If the student seems to be tiring or fading away, give them some free time.

47. Be patient when watching for a visual response from the student.

48. Supplement the material presented with tactile, verbal and/or auditory, or color cues. Keep these cues simple and direct.

49. Although things should be kept simple, be sure to use visually interesting items and don't forget about common household objects which might be interesting to explore.

50. Give the student repeated practice. Remember, the more familiar something is, the greater the chance that they can "see" it.

51. Allow the student to view objects as close as necessary or in any manner he/she needs to (for example, tilting of the head). The student might be compensating for a field loss.

52. Use color coding (especially red or yellow) for basic shapes, common objects, or words. For example, pair a common object like a cup with the word and color until the student understands the concept.

53. When using touch as a means of introducing new information, guide the student's hand (by the wrist) to the object or lightly touch the object to the student's fingertips rather than just placing everything in his/her hand. If the student is encouraged to reach out, it seems to help develop some sense of depth perception and also helps counteract the "good fairy syndrome."

54. Observe the student. Let he/she "tell" you what they can "see" and "do" best.

55. Begin with an activity that is within the student's abilities at the moment. Behavior today is not always the same as behavior yesterday.

56. Determine which sensory system gives the most accurate information, then pair visual skills with that system.

    a. To determine which sensory system is most accurate for the student, use only one sense at a time (e.g., favorite sound like a rattle). Just after student starts touching something nice and soft, shake rattle; if the student stops touching, suspect a problem with multi-sensory perception.

57. Link touch to visual input for the student to understand the concept. Pair visual information with other sensory cues. Begin by using only one sense at a time; however, since vision is often best stimulated when paired with another sensory system, a multi-sensory approach should soon be tried, if and when this is possible.

58. Introduce new and old objects via touch and verbal description. Touch should be considered as a major sense for learning. Encourage exploration by touch, then have student look at object, but allow student to avoid visual gazes if needed.

59. Care should be taken to prevent visual overload. Do not over-stimulate the student with visual clutter. Over-stimulating lights and other things may distract the student. You may need to adapt the environment.

60. Avoid any extraneous stimulation. You may need to adapt the environment to reduce noise clutter and other distracters.

61. Use simple cues. Keep materials, toys, and environment simple in form and uncluttered.

62. Present visual images in isolation. Present items one at a time. Avoid figure-ground clutter.

63. Use real and familiar objects rather than abstract. (example: orange versus circle) Familiar objects might be a bottle, bowl, toy, or diaper. Present these one at a time.

64. Be aware of visual preferences, also color, shape and/or size preference.

65. Look for a visual field preference. There is no rule as to whether central vision or peripheral vision is better.

66. Color vision is usually intact and color can be used effectively. Color code simple pictures and shapes for additional cues. Use bright fluorescent colors like red, yellow, pink, orange, and green. Perhaps outline pictures, numbers and letters to attract attention to something you want the student to focus on. Colored Mylar seems to evoke visual responses (pom poms).

67. Keep color of materials constant to avoide confusion. This also applies to any visual cues used; they should be consistent over time and location. If a red bowl is used at home for eating, the same should be used in school.

68. Use high contrast such as yellow against black.

69. Color coding gives additional cues.

70. To keep visual performance from fluctuating and to help reduce visual fatigue:

    a. Try working for shorter periods of time, but more often.

    b. Try to limit the number of people directly involved in the intervention.

    c. Try to divide a long task into smaller amounts and present more often.

    d. Important to remember the fatigue factor and put it into the Learning Media Assessment.

71. Allow student to avoid using visual gaze, if necessary. If a student looks away from an object in a specific task and uses tactile to perform the task, deliberately avoiding using vision, it may be so the student can complete the task. (This theory has not been proven.) In this instance, do not try to teach the student to use his/her vision at this critical moment.

72. Students may get close or bring objects close to their eyes. This is probably done to block out extraneous background information. Remember, crowding is when too many objects are put next to each other. This often leads people to believe students with CVI are near-sighted. These students often near-sighted, but this does not necessarily mean near-sighted. (Don't put your keys/pencils on table while working with student.)

73. Give the student time to respond to the materials being presented. Latency means student needs time to respond visually. Be patient. We need to warm up the visual system.

74. Utilize repetition and routines. This makes it easier for the student to understand his/her environment. Generalizations can occur more easily when the same visual cues or objects are used in different activities. Change one thing at a time, generalizing along the way. Use same object, same process, etc. Familiarity and security breeds response.

    a. Example: Start with one yellow object, and then move to another yellow object, and then on to another. Each time a change is made, the time for the student to respond should get shorter.

75. Language helps a student to understand a visual situation by adding meaning to it. Be consistent in the language you use. (Find the . . . ., get the . . . ., where is the . . . ?) There are times when any language at all could break the student's focus on a task. Be aware of the student's response cues.

76. Even though it is said that the "Where" system is easier than the "What" system, looking around the room for a toy is difficult as there is usually so much to see. Use terms like "big blue ball." This helps to focus and bring the object out of its background more easily.

77. Students with CVI need help to successfully decode visual images.

78. Be aware of other "drains" on energy. It is important to determine the best position for the student to use his/her eyes. The more energy being expended on holding one's self up, the less can be used for seeing and for focusing. Often times, just other people talking can be too much.

79. Use movement of a visual stimulus to elicit a visual response. Objects are more easily seen when they are moving, especially in the peripheral fields. Try shaking objects in different visual fields.

80. When a student responds more to moving objects, their O & M skills are probably better, but "at the table" work is very difficult for them.

81. Movement might mean rocking the student over a roll, present light while rocking, stop rocking and put out light. The student may begin to associate and you will be able to decrease the pairing.

82. Use contingent stimulation so that student with multiple impairments learns to control his/her environment.

83. Use active versus passive learning.

84. Bright lighting can help a student see and attend to visual materials more consistently; however, with students having CVI, the lighting definitely needs to be adjusted, both natural and artificial.

85. Try varying the sources of light from behind and/or the side.

86. Different situations may need different lighting.

87. May need to turn off a light or use diffused lighting to get the student to focus on the task.

88. Controlled incandescent lighting may be better than fluorescent lighting. The buzz from the fixture may be very annoying and distracting to the student with CVI.

89. Even though students with CVI are attracted to bright lights, they may be overwhelmed. They may only look briefly, look away, and look again. They can't focus for any amount of time.

90. Some students with CVI are photophobic and need to have a dim light or be shielded from bright sunlight.

91. A combination of reading media may be necessary. Many students use print as well as Braille to access their materials. In order to keep up, a student may start by reading print but may fatigue and then change to Braille.

92. Use contrasting paper, templates or marker to block out some of the visual information. Materials, whether it is pictures or toys, should be simple in form, high contrast (bright yellow against a black background, etc.). Choose objects/pictures with only one or two colors (may be difficult to find) prevent visual "overload" and limit viewing area by showing one object/picture or one part of an object/picture at a time. Keep simple and uncluttered. Have students STOP, LOOK, and LISTEN.

93. Space objects farther apart on a page and use finger to move from one object to next on a page.

94. Use books with one clear picture on a contrasting simple background. The simpler, less busy picture is needed. Some artists' styles are already simple and have little clutter; one book like this is "Are You My Mommy?"

95. You may need to buy two books so one can be cut up using the main characters or objects, gluing them one to a page. (Most books have pages on each side so you would need two books). Dollar Store finds are good. Just make up your own stories to go with the pictures.

96. Piece-meal vision may be a problem. Face recognition may be hard. If scanning is abnormal, less attention is given to features.

97. Color vision is usually intact and color can be used effectively. Color code simple pictures and shapes for additional cues. Use bright fluorescent colors like red, yellow (easy to see). Pink, orange and green are also great.

98. You might outline numbers, letters, or pictures to attract attention to something you want the student to attend to (spelling words). Colored Mylar seems to evoke visual responses. Pom Poms (careful).

    a. One mother used flashcards and picture dictionaries to match pictures with words.

    b. One mother found that repeating short periods of visual exercises helped her student to learn to process certain kinds of information (tracing, power of tactile/kinesthetic input).

    c. One student could identify Winnie the Pooh in any size but it had to be in yellow or red color. When the same pictures were in black and white, the student was unable to identify at all.

    d. Light box materials really need to be adapted and tried.