Augmentative and Alternative Communication (AAC): Visual and Environmental Considerations
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Visual and Environmental Considerations

The purpose of this framework is to help school teams assess a student’s ability to visually access a communication system/display and to address the impact of environmental issues. In situations where additional information concerning a student’s visual functioning is needed, the services of a teacher of students with visual impairments may be explored. The school team should also incorporate information from the family concerning results of a recent comprehensive eye examination conducted by an eye care specialist.

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<th>Issue</th>
<th>Description</th>
<th>Questions to Ask</th>
<th>Suggested Adaptations</th>
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<tr>
<td><strong>Lighting (Type)</strong></td>
<td>A student’s visual performance may improve under different lighting conditions.</td>
<td>Which type of light is best for the student in various situations? (Incandescent, fluorescent, LED, halogen, natural, etc.)</td>
<td>Provide preferred type of light for student use.</td>
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<tr>
<td><strong>Lighting (Indirect vs. Direct)</strong></td>
<td>Indirect or ambient light may cause glare problems. Direct light may increase contrast.</td>
<td>Does the student’s visual performance improve when a direct light source is provided?</td>
<td>Provide flex-arm, gooseneck, etc., clip-on or mounted direct light source for the student.</td>
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<td><strong>Lighting (Amount)</strong></td>
<td>The intensity of the light source may impact visual performance.</td>
<td>Does the student’s visual performance improve under high or low levels of lighting?</td>
<td>Use rheostats or environmental modifications to control amount of light.</td>
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| **Lighting (Direction)**       | Visual performance may be affected by shadows or glare depending on the direction from which the light is coming. | • Does the student’s visual performance improve if the direct light source is coming from the left, right, or above?  
• Does the student’s visual performance improve with window light coming from behind, left, or right?  | • Control the direction of the direct light source.  
• Select a location for the student’s seating that best utilizes indirect lighting on materials. |
| **Lighting (Glare)**           | Under certain conditions, light reflecting off visual materials may cause a decrease in visual performance. | Ask yourself:  
• When I position my face where the student’s face will be, do I perceive glare?  
• When the student’s position or environment changes, is there a change in the level of visual performance?  | • If glare is present it may often be eliminated by simply repositioning the direct light source, the visual material, or the student.  
• Provide an anti-glare shield on the display, device, or board to decrease glare.  
• Provide anti-glare acetate (colored plastic filter) overlay on visual material. |
| **Lighting (Light sensitivity/photophobia)** | Some eye conditions result in photophobia or light sensitivity. | • Does the student’s eye condition result in photophobia or light sensitivity?  
• Does the student’s visual performance improve in lower levels of light?  
• Does the student exhibit excessive squinting, blinking, or try to shield eyes under various lighting conditions?  
• Does the student exhibit a change in behavior when moving from dark to light or light to dark environments?  | • Use rheostats to control amount of direct light.  
• Use sunlenses that absorb the kind of light that contributes to photophobia.  
• Use color filters or different color light bulbs for comfort.  
• Use hats with brims or visors to block light. |
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| Contrast (Light/Dark Density – Boldness) | • Bolding materials may increase attention, localization, and discrimination.  
• Enlarged materials alone are not always better. | • Does the student’s accuracy, endurance, working distance, and speed increase when materials are bolded?  
• Does the student have difficulty using LCD displays? | • Bold materials and displays or use backlighting on LCD displays.  
• Use visual accents to increase visual attention to materials. |
| Contrast (Polarity) | • Most text and displays use positive (black text on white background) polarity.  
• Some students perform better visually when materials are presented using negative (white text on black background) polarity. | Does the student’s visual functioning increase when materials are presented using negative or positive polarity? | Use preferred polarity when designing displays or boards. |
| Contrast (Color vs. Black/White) | Many students report that black and white materials provide more contrast than color targets. | Does the student’s visual functioning increase when using black and white materials vs. color materials? | • Use black and white if color causes a decrease in contrast.  
• If materials are already in color, use acetate color filters to enhance contrast. |
| Contrast (What’s beyond the target?) | Contrast can be increased by controlling the background of the visual material. | Is the student able to discriminate materials when the background is cluttered or low in contrast? | • When asking a student to make choices using visual gaze, wear contrasting clothing.  
• Provide high contrast background on displays and boards.  
• Modify computer screen backgrounds. |
| Magnification | Enlarging materials may be accomplished in various ways. | Does the student require larger materials to increase discrimination? | • Make materials larger.  
• Allow student to move closer to materials.  
• Use optical low vision devices. |
| Distance From Materials (Working Distance) | Some students may prefer a certain working distance. | • Does the student exhibit increased visual functioning at a certain working distance?  
• Does the student exhibit problems with visual focusing and refocusing on materials at different distances? | • Help student control the environment by positioning materials at preferred working distance.  
• Decrease the demand for visual focusing and refocusing by positioning multiple working materials at the same working distance. |
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<td><strong>Position of Materials</strong> (Angle of View)</td>
<td>Placement of visual materials, devices, keyboards, or language boards in various planes may increase visual performance.</td>
<td>• Does the student exhibit difficulty seeing desired materials when they are placed flat on a table or tray? • Does the student prefer to use a particular field of vision? • Does the student exhibit eccentric viewing (viewing materials by looking off to one side or another)?</td>
<td>• Use a slant board to position materials in the same plane as the student’s face. • Position visual materials in student’s preferred visual field.</td>
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<td><strong>Number of Materials/Choices</strong></td>
<td>Complex AAC displays may require the student to access many materials or targets.</td>
<td>Does the student exhibit systematic scanning and localization skills sufficient to visually access displays with many materials or targets?</td>
<td>• Color code materials to help the student efficiently localize and scan. • Use typoscopes (black Mylar window cutouts) to help with localization and scanning. • Promote systematic scanning on complex displays.</td>
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<td><strong>Spacing</strong> (Visual Clutter)</td>
<td>Complex AAC displays may appear to be visually cluttered.</td>
<td>Is the student able to discriminate between materials when they are placed in close proximity to each other?</td>
<td>• Use bold lines of demarcation between materials. • Block materials with bold outlines.</td>
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<td><strong>Font Characteristics</strong></td>
<td>Different font characteristics may effect visual performance.</td>
<td>• Is there a particular font which the student is better able to discriminate? • Are serifs an issue?</td>
<td>When possible, use the student’s preferred font characteristics on displays and output screens (in many cases, block style print is preferred).</td>
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<td><strong>Time/Speed Requirements</strong></td>
<td>Communication often needs to be spontaneous and quick, requiring advanced visual skills.</td>
<td>Is the student able to effectively keep up with communication demands?</td>
<td>• Plan for needed communication messages. • Use a system that allows for maximum visual performance. • Allow for extra time.</td>
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